THE

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Editorial.

THE LIVERPOOL UNIVERSITY AND VETERINARY TEACHING.

NOW that a decision has been obtained from the Home Office on this vexed question, it becomes us to review the whole situation. We shall endeavour to do so in a calm and judicial spirit, although we confess our feelings have been considerably ruffled by the fierceness and violence of the opposition which we have had to encounter, and although this task has been rendered difficult by the many efforts which have been made to stir up strife and envy, and, in the course of the struggle, to falsify and obscure the issues. The amount of sophistry which we have had to encounter is quite appalling; the intensity of the jealousy which has been aroused, and the implacable vindictiveness of many of the opponents of the Liverpool scheme have been quite saddening. We have been told by certain men who imagined themselves inflamed with patriotic ardour that the distribution of Veterinary Colleges in the ratio of one for each of the great divisions of the country—England, Scotland, Ireland—was excellent, and in accordance with all the laws of economics. These wise men unfortunately overlooked or shut their eyes to two rather startling difficulties, hoping, we have no doubt, that their fellows would conveniently follow their example. They forgot that geographical divisions do not coincide always with wealth or population, and they forgot in their rhetorical enthusiasm that there is a division of the country called Wales. So this theory, believed to be so statesmanlike and so benevolent, was vitiated. A rhetorical phrase, even when it is a mere commonplace, is frequently, as in this case, quite deceptive; it lulls one to slumber, but the awakening is often extremely unpleasant, because it is so unexpected. Let us prick this bladder and permit the air to escape and the bladder to resume its natural flabbiness. Let us remind our readers that London alone, with its suburbs, contains a population twice as large as the whole of Scotland, and represents infinitely more wealth. If Scotland is to have one Veterinary College all to itself by virtue of its population and wealth, London ought to have two. Anyhow, the London College on this calculation will have quite enough to do to attend to its own business. If we remember further that London is the metropolis of the country, that it is the commercial centre of the world, that it is the point to

which all the great railway lines converge, to which all the wealth and talent of the country tends to flow, our wonder is that it is content with only one Veterinary College; still more, that it is content to share this precious possession with the rest of the country lying south of the Tweed. Let us take a wider survey, and discover the next most important centre of population in the country. It is certainly in the district surrounding Liverpool. Then what more natural, if we are to choose, than to fix upon Liverpool much rather than Edinburgh as the site of a Veterinary College? The city itself contains more than half a million of inhabitants; it has an enormous shipping trade, and is a convenient railway centre. It is within easy distance of Yorkshire, with its immense agricultural interests; it may almost be called the capital of Wales. The wealthy men of Liverpool have shown splendid patriotism and a magnificent appreciation of the possibilities of the situation by contributing to the endowment of their University. With truly Imperial instinct they have realised the truth that what concerns the world concerns Great Britain, and they have founded the School for the study of Tropical Diseases. They see the importance of avoiding dislocation of trade and its consequent miseries, especially when this affects the food supply of their poorer countrymen, and they have called the veterinary surgeon to aid them in their wise and benevolent and patriotic schemes. Is it a wonder that some of us have thankfully accepted the proffered help, and agreed to carry out the project, so excellent from so many points of view? For it must be remembered that the union of wealth and skill is of happy augury. The scientific man, when he is set free from everything in the shape of sordid care, can devote his whole energies to that which is his life task. He finds the necessary instruments and apparatus at hand, and with such mechanical help he effects wonderful economy of effort. The student of science finds in libraries and well-ordered laboratories and museums the best aids to his progress. If his parents' means are small, he finds that bursaries and scholarships smooth away the inequalities and injustices of life. If he is enterprising, he applies to the influential men connected with his College, and obtains a post abroad, so as to further his studies and permit of association with others than Englishmen. On the other hand, commerce finds its association with science distinctly beneficial. And it must not be imagined that there is anything degrading or unbecoming in such a union, for commerce, properly understood and properly conducted, is simply activity specially subordinated to economic law. Nor is economic law to be treated with disdain, still less is it to be despised or neglected. It is as much a part of the Divine ordinance as scientific law, and may indeed be described as that law in another form. It is for this reason that wise merchants seek the help and advice of their brethren of science, knowing that only by combination can the success of any scheme be assured.

It seems quite inevitable, even if it had been undesirable on the part of veterinary surgeons, that Veterinary education should be connected with and attached to the University education of the country. The University of Edinburgh, it is well known, is moving in that direction, and likewise London University. We may shortly see the institution presided over by Professor M'Fadyean, the bitterest opponent of Liverpool, affiliated to the University of London. We at one time thought indeed that independence might be maintained by the help of the Equivalent Grant, and made efforts accordingly. These efforts were redoubled when we heard that a sum of £15,000 was to be given to the Irish Veterinary College, and we hoped that a yearly sum of £750 (that is, 5 per cent. on the sum granted to Ireland) might be bestowed on Scotland for at any rate a few years. But it seemed otherwise to those in power at the Treasury, and the scheme fell through. Here we may remark that the bitterest opponents of the Liverpool project made no opposition to the Irish project, but remained quite dumb whilst it was being prepared. It appears inconsistent with their screaming and shouting at the present time; perhaps they are trying to hide their inconsistency or their selfishness by this specious geographical theory of theirs.

We would now beg our readers' kind indulgence for a moment or two whilst we analyse the opposition which has been offered to the Liverpool amalgamation and affiliation. The first distinct note of discord was heard this year, when in March—and, mark, prior to the meeting of the Council of the Royal College of Veterinary Surgeons—the Governors of the Royal Veterinary College, Camden Town, presumably on the initiative of Professor M'Fadyean—or how otherwise could the Governors know of the proposal at all?—went to work in order to influence the Royal Agricultural Society. There was hurriedly called a meeting of the Governors of the Royal Veterinary College, who amongst them drew up a petition to the Royal Agricultural Society. Then some of these Governors—the Principal presumably included—proceeded to Hanover Square, where the offices of the Society are situated, and there in the capacity of Members of Council of the Society received their own letter of petition. As the matter was considered a very grave one, it was remitted—we wonder if on the motion of Professor M'Fadyean?—to the Veterinary Committee of the Society. Once more Professor M'Fadyean appears on the stage, this time as a member of the Veterinary Committee of the Society, and receives and gravely considers with judicial solemnity the original and familiar petition. It is then proposed by Sir Nigel Kingscote, the Chairman of the Governors of the Royal Veterinary College, that a deputation be sent to the Home Secretary for the purpose of urging him to oppose the Liverpool scheme.

But Professor M'Fadyean appears in still another rôle. He

appears at the Council Meeting of the R.C.V.S. and opposes this scheme, as it may interfere with the practices of the veterinary surgeons in Liverpool (twenty-two of whom, by the way, are supporting the scheme!), and because University teaching will lower the standard of Veterinary education! Not content with this, Professor M'Fadyean nominates a committee and deputation to wait on the Home Secretary and oppose the scheme—but respectfully declines to join that committee or deputation, though pressed to do so. Perhaps the members of the profession are not aware that that deputation consisted *entirely* of those opposed to the scheme, and though the minority begged for representation, their request was rejected with scorn. Are the members of the profession also aware that of the majority three were Camden School teachers, and at least two were governors of that School? Can any other school command such a representation of vested interests? How often has it been urged that each school should only have one representative, and yet Camden Town had at least five on this occasion?

It will thus be clear to any unprejudiced observer that the opposition to the Liverpool scheme has been at least engineered from Camden Town, that it is vexatious, that it is dictated by unreasoning jealousy, that under cover of zeal for the profession it aims at exclusive privilege, that it is hollow and not very creditable. A section of the Veterinary press has taken up the Camden Town cry, and tried to howl down the Liverpool request. It has been vituperative and hysterical by turns, has tried to excite fear, and jealousy, and envy, and many other evil passions; has suggested plotting, and asked excitedly for an explanation of "the mystery." There is no mystery; there never was. Events have succeeded one another in rapid succession; great developments have taken place, but all this was perfectly evident even to the layman, much more so to the careful veterinarian. Reading the denunciatory articles that have appeared within the last month or two, one would have imagined that some base attempt had been made by the New Veterinary College of Edinburgh to deceive or over-reach the Royal College of Veterinary Surgeons, and grasp at greater privileges than it already possessed. After what we have pointed out regarding the distribution of wealth and population, it is surely quite reasonable to say that the New Veterinary College of Edinburgh wished simply and only to place itself in harmony with the altered conditions of things. Do the writers of the various articles think that the Principal of the New Veterinary College has not as great a reputation at stake as they? Do they imagine that the University of Liverpool is an obscure school run for purposes of gain by ignorant and worthless men? Are they so silly as to imagine that His Majesty's Government would allow any nefarious compact to be carried out to the detriment of the Veterinary profession, even if the Liverpool University and the New Veterinary College conspired for such a

purpose? All the wild talk about surrendering to the Medical profession is quite useless, and has been so often and so fully contradicted and disproved that we need take no further notice of it. The facts of the case are open and apparent, and ought to appeal to every reasonable man; we trust that soon the results of the affiliation will triumphantly justify the efforts to obtain it.

To the more timid and apprehensive of our professional brethren we would offer the assurance that we yield to no man in our loyalty to the Royal College and to our profession; we would point out to them that the Royal College holds the key of the situation in its own hand, as it alone can grant licences to practise. Finally, we would respectfully suggest that the Royal College, of which they are members, ought to be, and might easily be, more conciliatory in its methods.

Royal College of Veterinary Surgeons.

10 Red Lion Square, W.C.,
July 1904.

At Meetings of the Board of Examiners held in London on July 11th for the Written and on and between the 12th and 14th inclusive for the Oral and Practical Examination, the following gentlemen passed their Final Examination:—Messrs. T. E. Burridge, R. Bennett, J. Blakeway, L. E. W. Bevan, E. Brown, L. Bone, E. T. Clemow, W. T. Collins, H. C. Dibben, E. E. Elpluck, T. C. Graves, J. T. M. Hughes, J. R. Hodgkins, B. H. Lane, W. J. Moody, H. Newton, R. L. Phillips, W. Trigger, R. Tindle, *W. Urquhart, E. R. H. Woodcock, and A. Whitehead.

The following passed their Third Examination:—Messrs. J. O. Andrews, W. Anderson, E. Berry, *W. A. Broad, R. Branford, E. Belcher, W. T. Brookes, *J. W. Chamberlain, A. Chisholm, †L. Danels, A. Douglas, *J. Godber, R. M. Gunn, J. R. Hewer, J. K. Hickes, A. L. Horner, H. A. Lake, E. S. Martin, A. Munro, S. H. Nixon, T. T. Prinse, R. B. Palmer, C. E. Parsons, *T. Speer, C. S. Simpson, G. C. Sooby, W. H. Simpson, W. H. Taylor, C. Taylor, W. H. Thomas, and H. S. Ward.

The following passed their Second Examination:—Messrs. W. G. Blackwell, W. P. R. Beal, E. Blamey, H. Bone, S. Carless, J. R. Crane, *L. A. F. Dawson, P. L. Edwards, G. B. Greer, R. L. L. Hart, M. Henry, C. Hartley, E. V. Hobbs, T. E. Jones, M. H. Kingcome, *P. J. Kerr, V. C. Leckie, T. Lishman, H. Morphew, *A. W. M. Pillar, G. B. C. Rees-Mogg, E. D. Sewell, Sidney Smith, *A. L. Sheather, A. E. Webber, W. R. B. Wakeham, F. Ware, and J. S. Young.

The following passed their First Examination:—Messrs. *H. J. Allen, *J. M. Armfield, S. R. Beaumont, E. H. Brogan, A. B. Bowhay, C. M. Barton, D. R. Chatterley, H. W. Crowther, J. N. Glass, A. A. Greene, *J. Hadfield, *H. M. Holland, W. D. Halfhead, *B. Hughes, *H. T. Hughes, J. H. G. Jerrom, W. Jones, G. W. Lucking, S. J. Motton, P. J. Morgan, D. O'Kell, V. Pride-Jones, *G. Tellyard, H. Tay, †W. Waters, *G. Yates, and R. L. C. Forrest, Edin. College.

Marked thus † passed with First Class Honours.
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Arthur Wm. Hill, *Secretary.*

ROYAL COLLEGE OF VETERINARY SURGEONS.

WALLEY MEMORIAL PRIZE.

REGULATIONS FOR EXAMINATION.

1. The Examination is open to the Students of any Veterinary College in the United Kingdom of Great Britain and Ireland, now or hereafter affiliated to the Royal College of Veterinary Surgeons for education in Veterinary Science, who shall have subsequent to the immediately preceding month of October passed the class C or Third Examination under the present four years course.

2. Candidates intending to compete for this prize must send notice of their intention to the Secretary of the Royal College of Veterinary Surgeons on or before the Second Monday in the month of August, after having passed their qualifying examination.

3. The subjects shall be Pathology, Materia Medica, and Hygiene.

4. The examination shall be wholly a written one. The time allowed for each of the three subjects of examination shall not be less than two hours.

5. An examination shall be held simultaneously in London and Edinburgh, and also in Dublin in the event of a Veterinary College being established in Ireland.

15. No fee is to be paid by any student competing for the prize.

THE LIVERPOOL UNIVERSITY SCHEME.

THE following letter has been received by the Vice-Chancellor from the Secretary of State for the Home Department :—

"WHITEHALL, *23rd July* 1904.

SIR—"I am directed by the Secretary of State to inform you "that he has carefully considered the arguments for and against the "proposal to empower the authorities of Liverpool University to "establish a School of Veterinary teaching, to take the place of the "New Veterinary College at Edinburgh, and that he has come to "the conclusion that it will be in the best interests of Veterinary "Science and of the Veterinary profession in this country to carry "out the University's suggestion."—I am, Sir, your obedient Servant,

"M. D. CHALMERS."

"The Vice-Chancellor, The University, Liverpool."

Original Papers.

MALIGNANT OR IRREGULAR FORM OF STRANGLES AFFECTING THE TAIL AND CONNECTIVE TISSUE SURROUNDING THE RECTUM.

BY CAPTAIN W. D. SMITH, A.V.D., HOUNSLOW.

Subject.—A bay mare (remount), four years old.

History.—Admitted under treatment 20th April 1904, with a large swelling in submaxillary region; temperature 103·2°. Animal placed in loose box. Fomentations and stimulating liniment applied to throat. Mag. sulph. and spirit. æther. nit. in drench.

April. 22.—Swelling hard and painful; temperature 102·4°. Repeat drench.

April 14.—Animal dull, off feed, and very stiff. Temp. 105·2°; pulse 74, quick and hard; respiration hurried. On close inspection a soft fluctuating swelling was found on the off side of the anus, increasing in size rapidly, and very hot and painful; foment part, and give spirit. æther. nit. and sodium hyposulph. in drench. Swelling in submaxillary region completely absorbed.

April 27.—Animal still off feed; temperature 104·8°. Abscess has burst outwardly at inferior margin of anus, forming a sinus 8 inches in length, and running in an oblique direction forward and outward. Cavity carefully washed out with solution potass. permanganate. Repeat drench, pot. chlor. in drinking water.

April 28.—Animal much brighter, appetite somewhat improved; temperature 103·2°. Continue treatment.

April 29.—Copious discharge from sinus; animal feeding well; temperature 103°.

April 30.—Another abscess forming on near side of anus.

May 1.—Abscess pointing at left inferior border of anus. Puncture and evacuate pus, wash out sinus with pot. permang. solution. Defæcation easy. Animal losing condition rapidly; temperature 102·6°.

May 2.—Considerable discharge from sinus on near side; continue treatment.

May 3.—Progressing favourably; appetite good; temperature normal.

May 5.—Purulent cellulitis has appeared with the formation of a large abscess at base of tail. Lance and evacuate pus. Remove hair on tail by clipping, and dress antiseptically.

May 6.—Much worse. A large crop of metastatic abscesses, involving tail from base to tip. Sinus on right side granulating. Place tail in antiseptic bath three times daily, and dress with boric acid and iodoform.

May 7.—Animal feeling well. Temperature 101·4°.

May 8.—Large abscess forming on lower third of tail. General condition much improved.

May 9.—Abscess ripe. Lance, and evacuate pus. Continue antiseptic bath and dry dressing.

May 10.—Moist gangrene of the lower third of tail has appeared. Scarify freely, and dress as before.

May 11.—The three terminal coccygeal vertebrae have sloughed, and are only held together by shreds. Remove bones and cauterise end.
May 12.—Progressing most favourably. Walking exercise daily.
May 15.—General condition much improved. Granulating rapidly. Continue dry dressing.
May 17.—Wounds healing and contracting. Animal improving daily.
May 20.—Granulation complete. Discharged cured to duty.

TWO CASES OF THROMBOSIS IN THE HORSE.

BY MAJOR T. A. APPLETON, A.V.D., DUBLIN.

An unusual and somewhat interesting case of thrombosis occurred in an Army Service Corps horse at Dublin last week. It was one of a pair driven in an Army Service Corps cart which had that morning done about 12 miles at a pace not exceeding 3 miles an hour, and drawing a comparatively light load. While being unharnessed it staggered, pitched forwards on to its head, and after a few struggles died. Post-mortem examination revealed nothing abnormal except slight congestion of the lungs, until the heart was opened, when I found a thrombus as large as a bantam's egg behind one of the tricuspid valves. It embraced the valve, was firmly attached to its chordæ tendinæ, and also to the endocardium. It was enclosed in a white, dense (almost fibrous) capsule, was nearly black in the centre, and had a somewhat striated appearance. I made careful inquiry into the history of the case, and found that the animal had been at regular work and was apparently in good health. The tricuspid valve could neither close properly nor open, but the immediate cause of the sudden death without any previous symptoms of distress is hard to explain, as this thrombus must have taken some days to form.

While on this subject I find I have another case of "thrombosis in a horse" among my notes. This occurred in Secunderabad a few years ago. The subject was a bay waler gelding, seven years old, the property of a native gentleman. It had been driven regularly for some months, when one morning after going about a mile it began to go lame behind, and got so bad that the owner was obliged to get out of the trap and lead it home. The following morning it appeared to be quite sound, so the owner again drove it. It went well for about a quarter of a mile, and then the lameness started, the horse showed great distress, started blowing hard, sweated profusely, and was unable to move for nearly half an hour, when they led him quietly home. The native salutrie who was called in to attend it found the off hind leg to be colder than the near one, and when turned in the stall it moved as if that leg were affected with rheumatism. However, when brought out it moved fairly well, and it was not until it was trotted about 200 yards that the severe lameness appeared. He gave it a dose of physic and had the leg well bandaged and hand-rubbed twice daily. About ten days later I was asked if I would mind seeing it, as at that time it either would not or could not move at all, and the owner was very anxious about it. When I arrived it was standing in a loose box eating its hay, and except for a haggard look about the face appeared quite comfortable. Temperature 101·3°, pulse 54 and intermittent. The off hind leg was very cold, and the

skin on the inside of the thigh was hard, shrivelled, and cracked, one of the cracks being so large that I could get four of my fingers quite deep into what should have been the gracilis muscle. On moving my fingers about the flesh simply crumbled away, and ran out of the opening in little dry pieces (mummification). On being forced to move round the box a few times he soon showed signs of distress, and his pulse rose to 67 and became very irregular. Seeing it was a hopeless case, I got the owner's permission to destroy it. Post-mortem revealed thrombosis of the external iliac and profunda femoris arteries. The iliac was only partially blocked, but the profunda femoris completely so.

While assistant to Messrs. Greaves and Faulkener in Manchester, I remember a case that must have been almost identical with this one. I only saw it the one morning, and then it was standing in a box with quite a small heap of dry crumbled flesh on the ground between its hind legs from dry gangrene of the muscles inside the thigh. I have no doubt Mr. Faulkener could remember both the history and post-mortem of this case. Unfortunately I have no records of either.

SOUTH AFRICAN HORSE SICKNESS.

BY CAPTAIN J. F. COLEY, A.V.D., UMBALLA, PUNJAB, INDIA.

Synonyms—Dunpaardziekte; Dikkopaardziekte; Fever Specific; Œdema; Mycosis (Edington).

History.—Horse sickness is a peculiar epizootic disease of South Africa affecting the equine species in that country, and, according to Dr. Edington, it has been known to exist in Cape Colony since 1780, and during the summer of 1854-1855 it assumed an epidemic form, and carried off nearly sixty-five thousand horses, not including mules. This may be that the latter were not predominant in the early colonisation of the country. Until recent years mules and asses were immune, and more than probable very little notice or observation was taken of their deaths owing to their small intrinsic value.

It exists in all the territories and colonies south of the Equator, and probably some north of the Equator. Nothing is definitely known of its geographical extent, but Sir W. Baker speaks of having encountered a somewhat similar disease on his journey to the source of the Nile. Livingstone also makes allusions in his account of his travels which all go to suggest that it is very probably prevalent in Central Africa, and Boy Adams, when on the Zambezi with Livingstone, informs me he saw undoubted cases of it. The late Dr. Fleming believed that the pestilence which destroyed our horses and mules in Annesley Bay in 1868, and which the Italian expedition suffered from in 1888, was of the same nature. He also alludes to the statement of M. Dupuy, Veterinary Surgeon to the squadron of Spahis, in the *Recueil de Médicine Vétérinaire* for August 1888, in which it is stated that of forty-six Arab horses landed at Kayes in 1885 thirty-three had succumbed in about three months. In his report he says:—"The mortality appears to be due to two diseases. One is as rapidly fatal as the horse sickness of South Africa, and only attacks the Algerian horses, leaving the small native ponies and the mules and asses from France unharmed; it is prevalent every year, exercising its maximum ravages towards the termination of winter, when the inundated regions begin to

dry. It affects isolated horses as well as those living in troops, attacking sometimes the old before the young, and appearing as frequently among those kept in the open air as in sheds. This form has been compared to the pernicious malarial fever of man, and indeed it has been so designated in the horse (*fièvre plaudéene pernicieuse*)."

"The other form is more like the intermittent fever of mankind, and although equally fatal has a slower course. It sometimes attacks indigenous horses, and it is marked by persistent elevation of temperature with remissions, which are soon followed by paroxysms. After death the liver and spleen are found to be greatly increased in volume, the blood is watery, and the lower part of the limbs and body is swollen by serous infiltrations. In the first form there are similar changes noted. The liver is excessively enlarged and friable, the spleen is also much larger than natural, the blood is dark, and by contact with the air does not redden, while it leaves a violet stain on the hand, the lungs are pale throughout, and rather resist pressure, the inferior portions having a yellowish tinge and gelatinous consistency, and after section an abundance of yellow foamy fluid can be expressed from them."

It maintains an enzootic existence in all malarial or low-lying districts, and in those districts shows an annual recrudescence at a certain season—viz., summer—making its appearance with the first rains and its disappearance with the first frost.

It prevails mostly in low-lying districts, but it must be noted that the "absolute altitude" of the districts has not so much to do with its prevalence as its "comparative altitude" with regard to the district immediately around, as it occurs in kloofs of a district several thousand feet above sea level, while districts without kloofs or valleys only a few feet above sea level are free, if they are some distance from the sea-coast, which is probably due to less moisture in the atmosphere.

It prevails in nearly the whole eastern coast and districts to the extent of about ten miles inland.

The season begins about November and lasts till May, but atmospheric conditions play an important part as regards the length of the season. If the season is very wet, and the rains come early and continue during the summer, then horse sickness will be rife. If it is a very dry summer, practically without rain, very few cases occur. When there are no rains until after Christmas, and then very wet for months, horse sickness is sure to be very prevalent. February, March, and April are generally the worst months, and moist days, when the air is humid and the temperature high, are typical of the horse sickness season. The onset of the different seasons in different parts of the country is liable to great variation in point of time and weather. The disease assumes an epidemic form at wide intervals.

Until 1887 horse sickness was believed to be anthrax, and known to be contagious. This belief was probably based on its symptoms, its enzootic character, together with the post-mortem appearances of the spleen, lungs, and connective tissues, but the scientific use of the microscope soon cleared this up. Lieut.-Colonel Nunn, in his bacteriological examination of the blood, proved that it was not anthrax, that it was not contagious, but that certain climatic conditions were always present when the disease was prevalent; but to Dr. Edington belongs the credit of showing that it is a disease "*sui generis*," that it has a constant period of incubation, and can be transmitted by direct inoculation of blood taken from a horse suffering from the disease.

Animals affected.—The disease only attacks horses, mules, and asses, in some cases zebras and quaggas, but Edington has never seen a case in the latter animals, and followers of game who have been constantly in malarial districts during summer told me that they never saw a case in these wild animals. Dogs were supposed to die from the disease owing to eating the flesh of animals dead from horse sickness, but Edington has proved this supposition incorrect, and that they are immune.

Etiology, or cause, is at present undiscovered, but probably is a very minute micro-organism, as under the highest power of the microscope and with the present methods of staining it is invisible, and that it passes through the best made filters, as proved by the fact that filtered blood serum (infectious) when injected produces the disease, as also does infectious blood when injected or given *per orem.* Yet none of the serous fluids, infiltrated into the tissues as a result of the disease, produce it when inoculated.

The following are the leading theories and ideas as to the possible modes of infection, viz.—ingestion, inhalation, inoculation.

At present one is unable to determine if natural infection takes place by only one or more of these channels, but probably all the above methods of infection are concerned in the spread of the disease, as will be gathered from the following results, which I have noted:—

The organism evidently requires heat and moisture for its propagation or vitality, appears to have a miasmatic origin, and to be transmitted by dews, fogs, and winged insects.

Ingestion.—Animals which eat dew-laden grass grown in an infected district invariably suffer from the disease, but they can eat the same grass with comparative impunity when saturated with rain. I have known instances of dew-laden grass cut in kloofs or valleys and given to stabled animals which contracted the disease; and of dew-laden grass from the same kloof, which was well dried in the sun the day after cutting, was also given to stabled animals a few yards' distance without any fatal results.

Inhalation.—I believe inhalation plays an important part in the introduction of the disease into the system. I have known two animals which were taken out of a troop and were ridden a few hours through a dense fog in a kloof, contract the disease, and die in ten and eleven days later, although, with the exception of mosquito inoculation, there was no other apparent mode of infection, as these animals did not get an opportunity of eating or drinking while away from their station, and they were the only two animals that died from the disease. Edington records one case of spontaneous infection from a horse suffering from the disease to its companion standing in the next stall, the animals being able to smell each other.

Inoculation undoubtedly is a very probable mode of infection, and more than likely mosquitoes and other winged insects act as host and intermediary bearers, as when one considers the vast numbers in which they are bred in stagnant waters and kloofs saturated with dew.

All the preventive measures enumerated hereafter are more or less preventive against inoculation by mosquitoes.

Symptoms.—There are two varieties of the disease, known by the Dutch names — Dunpaard-ziekte and Dikkopaard-ziekte. In the former the symptoms are as a rule comparatively absent until just before death. The animal appears in perfect health and vigour, and within an hour characteristic symptoms may appear, such as hurried respiration, animal lies

down and gets up again immediately, soon followed by violent heaving of the flanks, staggers about for a few moments, falls down, and ejects a quantity of white froth from the nostrils and mouth, followed by death in a few minutes.

The symptoms usually seen in the dikkop form appear some days before death, and gradually become well defined towards the end, viz., the neck, head, and lips become swollen, in some cases enormously, the eyes close and the lower lip droops.

A sub-variety of this disease is called "blaw-tong" or blue tongue, when the swelling of the head and neck is not marked, but mostly confined to the tongue, which presents a livid blue colour, due to the intense venous congestion.

Owing to the absence of symptoms until just before the onset of death, it was believed the disease was of very short duration. The foregoing symptoms are all that is generally noticed by farmers and horsekeepers, but if animals in horse sickness districts, or which have been through such districts, are carefully inspected and their temperatures taken daily, the first symptoms discovered will be fever about the seventh or eighth day after infection, and if my memory serves me correct, when investigating this disease under the supervision of Dr. Edington, the incubation period, in animals experimentally inoculated, was from six to eight days. A noteworthy feature about the temperature is that it gradually rises, and seldom, if ever, is below the previous day's temperature taken at the same time. The morning and evening temperature will be higher than the previous day, although the morning temperature may be below that of the previous evening, but will be higher than that of the previous morning, and so gradually increases to 105° and in some cases to 107° Fahrenheit, until the final stage is reached, when it suddenly drops to normal or below it.

The primary rise of temperature is soon followed by a dusky yellow pinkish discoloration of the conjunctiva, which is congested, and invariably petechial or stellate spots are present, which are always well marked, and generally there is a watery discharge from the eyes and a peculiar dry husky breaking can be detected on auscultation at the trachea; in a day or two these symptoms become more marked, and are followed by œdema of the conjunctiva and eyelids, swelling of the supra-orbital fossa, injection of the nasal mucous membranes, swelling of the neck along the jugular furrows, and in the dikkop or bighead variety the head and neck may be swollen to an enormous size, the eyes closed up, and the conjunctiva protruding; these symptoms are followed by weariness, the animal stands lazily, rests its head on the manger or against the wall, resting one leg, then the other, and in the final stages refuses food, although in the beginning appetite is unimpaired, breathing increased to thirty or over per minute, pulse small, quick, and hard, which soon becomes feeble, often intermittent, and auscultation of the heart often gives tumultuous or palpitation sounds. There is a jugular pulse, animal lies down and soon gets up again; about this stage a yellow clear fluid discharges from nostrils, on auscultation at thorax the breathing is audible and of a gurgling sound, which gives one the impression there is fluid in bronchial tubes, respiration is hurried and laborious, the animal falls or lies down and dies suddenly; frequently a few moments before death a great quantity of white froth is blown from the nostrils, and almost invariably at death this froth appears at the mouth and nose, which retains its form and does not become fluid till some time after death.

The froth is the yellow fluid mixed with air from the lungs, and

(*Page* 70.)

according to Edington is blood serum. The commonly observed symptoms are usually evident about the tenth day, and death takes place about ten to fourteen days after infection, and in the dikkop variety a day or two later.

In the subcutaneous tissue along the jugular furrow there is generally found a yellow gelatinous exudate, also in the supra-orbital fossa, and if the animal has died from the dikkop form, the same exudate is found in all the subcutaneous tissues of the head and neck. The lungs are always congested and often very voluminous. The interlobular spaces are well marked by a yellow, jelly-like exudate, which is a very characteristic feature of the disease, and towards the free edges of the lung this exudate may be half an inch thick. A similar exudate is often present immediately under the pleura, sometimes there are patches of pleurisy, and occasionally there is some gelatinous or blood-stained exudate in the thorax.

The bronchial tubes invariably contain whitish froth, which is generally seen on incision, and if not, by squeezing the lung tissue. In many cases the trachea is full of froth and yellow exudate.

In animals which have not been worked during the disease the lungs may be pale in colour, and no exudate visible without the aid of a microscope.

In animals that have been worked up to a few hours before death the lungs are generally enlarged with blood, and the exudate into the interlobular spaces well marked, but there is no true inflammation of the tissues.

The pericardium in every case contains straw-coloured or slightly blood-stained exudate, varying from a few ounces to pints. The parietal portion of the pericardium is often injected and opaque.

The heart muscle is usually normal, but extending from its base to the great vessels, and involving the surrounding connective tissues a considerable amount of the characteristic yellow exudate is to be found, and on the outer surface of the heart towards its base are sometimes extravasations, but these are more common on the endocardium, at the attachment of the columnar corneæ, which is usually opaque.

In many cases ante-mortem clots are found in the ventricles on the bi- and tri-cuspid valves. Post-mortem clots are more frequently found in heart and large blood-vessels. The blood is invariably a dark colour and coagulates quickly.

The liver in many cases is enlarged and congested.

The spleen, as a rule, is always enlarged and deeply congested, the substance softer than normal, and of a very dark colour, owing to the intense venous congestion.

The kidneys may be slightly enlarged, and pelvices contain some gelatinous exudate.

The gastro-intestinal tract shows gastro-enteritis well marked in nearly every case; gastritis, and the right half of the stomach congested, but not always of a deep red colour, as noticed by Professor M'Fadyean in his experimental cases.

The pathological phenomena are to be ascribed to the characteristic gelatinous yellow exudate, which is blood serum, in the serous and subcutaneous tissues, and best marked within the thoracic cavity. The enormous exudation into the pericardium must exert some very definite interference with cardiac action, while the pleural exudation furnishes physical impediments to the function of respiration.

The absence of any true inflammatory phenomena, the acute venous congestion, and exudation of blood plasma is a peculiar feature of the disease.

The indications for treatment afforded by post-mortem examination are—

1. Lessen blood pressure.
2. Maintain the blood-vessels in proper tone.
3. Diminish the fluids of the body.
4. Prevent muscular exertion.

Treatment.—This disease is looked upon as more or less incurable and treatment not of much avail; 95 per cent. of cases generally die.

A large variety of medicines have been used without much success, and innumerable "quack" remedies applied. The medicines generally used are arsenic, calomel, carbolic acid, corrosive sublimate, febrifuges, stimulants, sulphur, turpentine, iodine, quinine, antipyrin, iron salts, &c., also bleeding and tracheotomy, a good many of which I have tried without success.

In 1898 I tried intertracheal injection of iodine on a case of the dikkop variety, and in twenty-four hours I was so much surprised at the improvement which took place that I decided to give this treatment a further test, and try if possible to perhaps improve on the iodine solution, which I found to give me the only satisfactory results.

The intertracheal injections used were as follows :—

R. Iodine, grs. iv.	R. Iodine, grs. iv.
Pot. iod. grs. xii.	Pot. iod. grs. xii.
Ol. terebinthum, xv.	A. carbolic mm. xv.
Glycerine, ʒj.	Glycerine, ʒiij.
Aqua, boiled, ʒj.	Aqua, boiled, ʒj.

Injected once or twice daily.

Of 36 animals treated in this way 7 recovered, 23 died within twenty-four hours, and 6 died in from two to six days from date of admission.

In some cases this treatment caused the animal undue disturbance and coughing for about an hour after the injection; also, if given every twelve hours for two or three days, the urine becomes blood-stained, and, on post-mortem examination the kidneys were much enlarged, congested, a livid blue colour on surface, and capsule if anything more easily detached than normal.

The following season I used intravenous injections, which gave more satisfactory results, besides causing practically no disturbance to the animal, so discontinued the intertracheal injections.

R. as follows :—

Iodine, grains iv.
Pot. iodide, grains xv.
Glycerine and aqua, boiled, aa. ʒj.

A noteworthy feature of this treatment is the immediate effect it has on the temperature.

In the majority of cases the temperature drops from one to two degrees within twenty-four hours after the first injection, and a gradual decrease of temperature afterwards is a favourable sign, also the ecchymoses on the conjunctiva are much improved in twenty-four hours.

If the disease is discovered the first or second day of the fever, two or

three injections usually effect a cure. If the animal is only treated early enough in the disease, the chances of recovery are greatly increased.

The following chart gives some idea of the treatment by intravenous injections, and the results.

All the recorded cases developed undoubted clinical symptoms of horse sickness.

In my hands over 66 per cent. of such cases recovered, but I do not claim that all horses with a rise in temperature were suffering from the disease, as coincidences are bound to occur, but I claim that the greater number of them, if left untreated or treated by old methods would have died of horse sickness.

PREVENTIVE MEASURES.

Stabling.—All animals should be stabled before sunset and not removed from stables until some time after sunrise, when the dew and fog have disappeared. Smoke should be kept going through stables or picket lines from small smouldering fires on windward side during the night.

If possible, remove animals to high veldt pastures where frost prevails.

Protect animals from bites of winged insects, particularly mosquitoes and their species.

Prevent animals from eating dew-laden grass until it is well dried in the sun.

Kraal horses with cattle at night, as the ammoniacal gases from excrement prevents winged insects and mosquitoes from infecting the place.

Animals which have to traverse districts infected with horse sickness and remain in them during the night, if not stabled, should have nose-bags on previously steeped in antiseptic fluid, sanitas for preference. Nose-bags are used by prospectors and game hunters in infected districts with success, tar being smeared on bag and nostrils; they are put on before sunset and taken off after sunrise; this plan prevents grazing and acts as an antiseptic inhalation.

A weak solution of paraffin oil lightly brushed over the animal every evening is an excellent preventive of mosquitoes, and should be used on all animals not stabled, and arsenic given daily is also beneficial, perhaps owing to its antiseptic action on the alimentary tract. Preventive inoculation, if successful, no doubt would be supreme, as it would enable animals to live and work in the worst horse sickness districts.

When protective inoculation can be employed throughout the whole country and animals rendered immune it will be of great benefit both from an agricultural and equine point of view. Dr. Edington produced an attached virus and serum for protective inoculation, which experimentally he has employed with success, but I am unable to say what the practical results of this method are.

"Salted" horses are animals that have recovered from the disease, and they possess a high degree of immunity.

They often suffer from secondary fever during the horse sickness season, which is not attended with much constitutional disturbances, but undoubted cases which recovered are known to have died from a secondary attack of the disease one or more seasons after the first attack.

AFRICAN HORSE SICKNESS

Intertracheal and Intravenous Treat-

A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.
—	102·8*	100·6	103·4*	100·6	101·4	100·2	103·0	101·4	104·0*	102·6*	104·0	101·0	102·8	101·0	103·2*	100·6
103·2*	105·0	104·0	105·0*	102·2	104·0*	99·8	101·6	101·0	102·0	101·6*	103·4*	101·4	103·8	102·6	100·2*	101·4
101·2	102·0*	100·8	104·2*	104·0*	105·2*	104·0*	104·6	102·2	103·0*	99·0	100·0	99·4	100·6	100·0	100·2	99·4
—	104·8*	103·8*	104·8*	103·8*	105·4	Died.	—	—	—	—	—	—	—	—	—	—
102·8*	105·0*	101·6	Died.		—	—	—	—	—	—	—	—	—	—	—	—
102·8*	102·0	100·0	103·0*	100·8	102·4	103·0*	103·6*	101·6	102·2	100·4	102·0	100·6	101·6	99·8	100·6	100·0
103·0*	103·0	102·8	103·6*	103·4*	102·8	102·0	103·2*	101·6	102·4	100·8	101·0	100·4	101·2	99·6	100·8	100·0
—	105·0*	104·0*	104·2*	102·8	103·4*	103·0*	102·8	101·0	102·2	100·4	102·6	100·6	101·4	99·6	101·0	100·0
105·1*	104·2	104·0*	104·0	105·4*	104·2	102·4	103·2	104·2*	105·4	103·4	102·4	101·4	—	—	—	—
103·4*	104·0*	102·8	103·4*	101·4	102·0*	101·0	100·0	Normal.	—	—	—	—	—	—	—	—
104·4*	104·6	105·0*	105·0*	104·4	103·4	103·4	102·2	104·4	103·0	104·4*	103·0	104·4	104·0	104·2	102·0	103·2
105·0*	103·6	104·2*	105·4*	102·2	104·4	102·4	102·0	102·4	103·0	104·0	101·0	102·0	100·0	100·0	102·0	102·0
104·0*	103·4	104·0*	104·2	103·6	104·0*	102·0	102·4	105·4	102·0	103·0	103·4	100·0	101·2	100·0	101·2	100·0
105·4*	104·6	103·0	102·4	—	—	—	—	—	—	—	—	—	—	—	—	—
103·4*	105·4	103·0*	104·0	103·0	—	—	—	—	—	—	—	—	—	—	—	—
104·0*	105·6	103·0	104·4	103·0*	102·0	101·0	100·0	102·0	102·0	—	Normal.		—	—	—	—
105·2*	105·2	103·4	103·4	103·0*	105·0	101·0	104·0	101·0	102·0	—	Normal.		—	—	—	—
105·0*	103·6	104·0*	102·0	104·0*	104·0	—	—	—	—	—	Left my charge improving.					—
103·0*	106·0	103·0*	104·4	102·2	100·0	101·0	100·2	—	—	—	Normal.		—	—	—	—
105·4*	103·6	103·6*	101·4	103·4	103·0	—	—	—	—	—	—	—	—	—	—	—
103·0*	102·4	102·0	102·0	100·0	101·0	—	—	—	—	—	Normal.		—	—	—	—
105·4*	103·4	102·6*	103·4	—	—	—	—	—	—	—	—	—	—	—	—	—
103·2*	104·0	103·0*	102·6	101·8	101·0	101·0	—	—	—	—	Normal.		—	—	—	—
103·6*	102·4	102·0*	102·6	—	—	—	—	—	—	—	—	—	—	—	—	—
104·0*	105·0	104·0*	105·0	—	—	—	—	—	—	—	—	—	—	—	—	—
103·2*	105·4	104·0*	103·0	101·0	102·0	101·2	100·0	—	—	—	Normal.		—	—	—	—
105·0*	105·0	105·2	104·0	—	—	—	—	—	—	—	—	—	—	—	—	—
105·0*	105·0	105·0*	104·4	104·4*	103·0	105·0*	102·0	103·0	103·4	104·2	102·4	101·6	102·2	103·2	103·4	101·0
105·4*	104·4	103·6*	104·6	103·4*	102·2	101·2	101·6	103·0*	103·4	103·8*	101·6	101·8	101·0	100·0	100·0	—
103·4*	104·2*	103·4	102·2	101·4*	102·0	100·4	100·6	100·0	100·0	99·0	Normal.		—	—	—	—
101·6*	102·3*	103·4	102·6*	104·2*	104·2*	101·6	103·2	102·4*	101·6	101·4	102·6	103·2*	104·2*	104·8*	103·0*	101·4
105·0*	104·6*	104·2*	103·2	102·4*	102·2	103·6*	104·2*	104·4*	103·8	102·4*	103·6	102·2	102·0	102·8*	103·2	101·4
104·4*	104·4*	105·2	105·2*	104·4*	104·2*	104·4*	103·2	103·4*	102·0	102·8	101·8	102·4*	102·4	101·4	101·2	100·0
105·2*	103·8	103·0	101·0	100·2	100·2	100·2	100·2	99·0	—	Normal.		—	—	—	—	—
103·2*	103·4	102·4*	103·8	103·4*	102·4	102·4*	103·2	102·0*	101·8	101·2	101·2	100·0	Normal.		—	—
104·2*	103·0	104·2*	105·0	103·2*	103·2	—	—	—	—	—	—	—	—	—	—	—
103·2*	103·4*	101·8	102·2	103·0*	103·2*	103·2*	103·2	101·2	101·8	—	—	—	—	—	—	—
104·2*	103·2	104·2*	102·2	104·2*	103·2*	103·0*	103·4	102·6	102·4	101·0	—	—	—	—	—	—
105·4*	105·2	104·4*	105·2	104·4*	103·6*	103·8*	101·8	103·6*	102·8	103·2*	101·2	101·0	102·2	100·6	99·4	Normal.

* Days injected.

TEMPERATURE CHART.

ment, April and May 1898 *and* 1899.

P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	Result.	No. of Injections.
	ed.	—	—	—	—	—	—	—	—	—	—	Died.	5 Inter-Tracheal.
102·0	100·4	100·8	99·8	101·0	99·6	100·4	100·0	99·8	Nor	mal.	—	Cured.	5 Do.
100·0	99·8	100·0	Nor	mal.	—	—	—	—	—	—	—	Cured.	6 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	4 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	2 Do.
99·8	99·8	100·2	Nor	mal.	—	—	—	—	—	—	—	Cured.	4 Do.
100·4	Nor	mal.	—	—	—	—	—	—	—	—	—	Cured.	4 Intra-Venous.
100·2	Nor	mal.	—	—	—	—	—	—	—	—	—	Cured.	5 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	4 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	4 Do.
101·4	—	—	—	—	—	—	—	—	—	—	—	Died.	4 Do.
101·0	Nor	mal.	—	—	—	—	—	—	—	—	—	Cured.	3 Do.
Nor	mal.	—	—	—	—	—	—	—	—	—	—	Cured.	3 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	1 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	3 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	3 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Not known.	3 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	1 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	1 Do.
101·0	101·0	—	—	—	—	—	—	—	—	—	—	Destroyed as unlikely to be fit for work.	4 Do.
Nor	mal.	—	—	—	—	—	—	—	—	—	—	Cured.	7 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	4 Do.
101·0	101·6	—	—	—	—	—	—	—	—	—	—	Cured.	11 Do.
101·0	Nor	mal.	—	—	—	—	—	—	—	—	—	Cured.	9 Do.
Nor	mal.	—	—	—	—	—	—	—	—	—	—	Cured.	9 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	2 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Cured.	5 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Destroyed.	3 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	5 Do.
—	—	—	—	—	—	—	—	—	—	—	—	Died.	5 Do.
mal.	—	—	—	—	—	—	—	—	—	—	—	Cured.	8 Do.

HYPERTROPHY OF THE HEART, WITH RUPTURE OF THE LEFT CORONARY ARTERY.

BY CAPTAIN W. D. SMITH, A.V.D., HOUNSLOW.

Subject.—A nine-year-old troop mare, 21st Lancers, in excellent condition.

History.—The mare had been at regular duty for past twelve months. She was an exceptionally brilliant fencer, was one of a jumping team in training for the military tournament, and had been at practice on the day previous to her death. On 26th May 1904 mare was sent to exercise at 7 A.M., and returned at 8.30 A.M., apparently fit and well. At mid-day stables it was noticed that she ate her food sparingly, and appeared to be rather dull. Nothing was reported, however, until 5 P.M., when the animal was admitted showing symptoms of acute pain. Pulse 84, feeble and running down; heart sounds indistinct; respirations laboured; temperature 102·4; pallor of the visible mucous membranes well marked; extremities cold.

Diagnosis.—Rupture of an internal organ.

Treatment.—Animal placed in loose box, and a diffusible stimulant administered; fomentations to sides; legs and ears massaged.

Pain continued without intermission until death at 8.30 P.M.

Post-mortem revealed hypertrophy of the heart, with dilatation of the left ventricle and thinning of its wall; muscular tissue pale and spotted in appearance; organ much enlarged, but weight only slightly increased. Pericardium congested with an enormous effusion of blood in pericardial sac.

A minute examination disclosed rupture of the left coronary artery at its origin, vessel considerably dilated, internal coat studded with irregular yellow patches; endothelium destroyed in parts, probably forming a small sacculated aneurism at seat of rupture.

UNUSUAL CASE OF EPIZOOTIC LYMPHANGITIS.

BY LIEUT.-COL. G. BERNE, A.V.D., HILIERE.

On the 21st May last a horse of "K" Battery, R.H.A., was admitted for treatment for adenitis. He joined the battery on the 1st March previously. The supposed disease during its initial stages took the usual course. A large submaxillary swelling developed, and this terminated in an abscess, which was opened and the contents evacuated. But the course of the disease was exceptional; there was no healing of the wound. On the contrary, a large cauliflower growth protruded from it, and from this pus slowly exuded.

The protracted healing became to me at last very suspicious, and I accordingly sent, on the 28th June, some of the pus to Major Butler, A.V.D., Professor of the Army Veterinary School, for examination. It showed the characteristic criptococci of epizootic lymphangitis.

I mention this case because there was no manifestation of the disease except the local submaxillary abscess.

THE ANTE-MORTEM DIAGNOSIS OF BOVINE TUBERCULOSIS.[1]

BY LLEWELLYN E. W. BEVAN.

THE economic and scientific importance of tuberculosis is so great and so well known to you, that no apology is needed for any sincere effort, however humble, which aims at eliminating some of the difficulties arising in the endeavour to detect the presence of this serious disease. I do not think, therefore, I need make any attempt to justify my choice of a subject for this paper.

The decision of the Royal Commission as to whether bovine tuberculosis is or is not transmissible to man is at the present time eagerly awaited, not only by scientific men, but by the world at large, and we may hear shortly now that the affirmative is proved beyond possibility of dispute.

I need hardly remind you that, should this be the case, the important nature of the work of preventing the transmission of the disease from the bovine to man, and the large share the members of the veterinary profession will take in it, cannot fail to be recognised by the general public; and, in order that his position may be established and he may be fitted to hold it, the veterinary surgeon must do all in his power to become thoroughly acquainted with the symptoms of tuberculosis, and with the methods which may assist him in detecting its presence.

Should it be proved that tuberculosis in cattle is transmissible to man, it will become necessary, in the interests of all, to arrest the spread of the disease among the lower animals by a stamping-out process; and if the contrary be established, there will still remain to be considered the large interests of those whose livelihood is gained by the breeding and sale of cattle, and of those who have in any way a pecuniary concern in live stock generally.

How seriously these interests are affected by the prevalence of tuberculosis, and how necessary it is that its presence should be detected at the earliest possible moment, is self-evident.

In both cases the work of the members of our profession is all-important, and the time is not far distant when the veterinary surgeon will be accorded the increased prestige which is his due, when it will be understood that he, in his branch of medical science, is as important a guardian of the public health as the human doctor, and when the true bearing of much of his work and its effects upon human life will be a matter of common knowledge.

The prevalence of the disease we are to consider to-day is a strong case in point, and affords great opportunity for awakening a general perception of the importance of veterinary science.

I would recall to your minds some of the opinions brought forward at the recent meeting of the National Veterinary Association at Windermere. One member said that a "veterinary service of public health has been advocated by Niven, Délépine, Crookshank, Scurfield, Manby, and Williamson of the medical profession, and Williams, Laithwood, Wolstenholme, Penberthy, and Hunting of our own," and, referring to dairy inspection, suggested that "the only proper person to carry out the duties of effectual dairy inspection is the veterinarian, and the veterinary profession must be

[1] First prize (Silver Medal), Royal Veterinary College Veterinary Medical Association. Session 1903-4.

alive to its own interests, and insist that no examination of live animals, whether as meat or milk producers, should be in the hands of any except duly qualified and reliable members of the Royal College of Veterinary Surgeons."

With regard to the disease under discussion, Mr. Lloyd said, "There is no doubt that the tuberculin test should only be in the hands of veterinarians, and means for dealing with piners and wasters, and cows affected with tuberculosis of the udder, also the careful disinfection of the premises occupied by such animals, will first claim the attention of the veterinary officer of health."

It will be useful, therefore, to briefly review and summarise our knowledge of the disease and its symptoms, and to set forth the methods of diagnosis which have been from time to time put forward. In submitting my paper for your discussion, I do not claim to advance any original observations; I have simply endeavoured to collect some of the views of learned and experienced authorities on the subject, hoping that some points may be found in the paper, and in the discussion I trust will follow, the consideration of which may help us to overcome some of the difficulties connected with the detection of bovine tuberculosis, and may be of service to us in the position of importance which I hope we, as members of the veterinary profession, may in the near future be called upon to hold.

The Clinical Diagnosis of bovine tuberculosis is a matter of great difficulty in view of the fact that the disease may be in existence for months without giving rise to any symptom suggestive of its presence. It is found in animals which have exhibited no derangement of general health, and it is possible for fattening beasts to continue to gain weight and even win prizes at shows, and for milch cows to go on giving their usual quantity of milk, and yet be tuberculous.

The slow evolution of the disease and the possibility of its presence consistently with all the appearances of health, frequently render clinical diagnosis uncertain and misleading.

When symptoms do exist which might suggest the presence of the disease, it is important to distinguish between them and those offered by other morbid conditions.

In the course of this paper I shall endeavour to point out some differential features which may be of service to the clinician, dealing afterwards with the use of tuberculin, the value of which as a diagnostic agent I shall refer to at a later stage.

The symptoms of the disease vary greatly according to the region affected, and I therefore propose to take—

1st. Pulmonary Tuberculosis.
2nd. Abdominal Tuberculosis.
3rd. Tuberculosis of the Udder.

Pulmonary Tuberculosis is by far the most common form of the disease. Professor Dewar estimates that in about 75 per cent. of cases the thoracic organs are early affected. It is also a very dangerous form, because the infected matter coughed up becomes dried and distributed, and may lead to dissemination of the disease.

In a case of this nature there may be at the outset no symptom whatever; the animal may be lively and eat with appetite, the hair may be

glossy, the skin neither dry nor adherent, and there may be no exaggerated sensibility in the region of the kidneys or diminution in the secretion of milk, the animal continuing to fatten as well as its fellows.

What, then, is to indicate to the observer that the animal is tuberculous?

It may be known that tuberculous animals have previously lived in the byre, and if this is the case, additional importance should be attached to any slight cough there may be, which is generally the first thing noticed by the attendant. A cow may be observed to cough now and then perhaps when the doors are first opened in the morning, admitting the cold fresh air, or when she is first turned out from the byre, is made to stand up, walk, or is in any way excited. This cough will be dry, accompanied by a little whistling, and occurring in short paroxysms.

During the coughing some mucus may be shot up; this will frequently be purulent, thick, viscid, and yellow, and may be of great diagnostic value.

While we are dealing with this point I should like to draw your attention to a very interesting article by Mr. John Riddock, M.R.C.V.S., Edinburgh, which appeared in the December number of the *Jonrnal of Comparative Pathology and Therapeutics.* In this article it is pointed out that there are two conditions in which tuberculous cows are especially a source of danger, the first when the udder is involved and tubercle bacilli occur in the milk, and the second, when the lungs are involved and purulent matter containing tubercle bacilli is coughed up and bespatters the wall in front of the animals.

The last condition he suggests may be of great importance in both ways—first, because the dried sputum blown about as dust may become a means of infection by inhalation; and secondly, because it may contaminate the milk during milking hours.

What I particularly wish to mention is the writer's statement that diseased products from the lungs of tuberculous cows are frequently available and afford a means of demonstrating the presence of bacilli, even when no other physical symptoms manifest themselves.

Mr. Riddock considers that it is possible in many cases where one has noticed a cow coughing, with her head in a horizontal position, her mouth open and in close proximity to a wall, to find, upon careful scrutiny, some small specks of muco-purulent matter adhering to the wall. These specks, he claims, frequently contain tubercle bacilli, and "afford a certain means of diagnosing the disease," which means, he says, has not hitherto received the attention it deserves.

Mr. Riddock cites twelve cases in which he diagnosed the presence of tuberculosis by the expectorate collected from the wall or feeding-trough, or (in one instance) from the back of the animal, where it had become deposited while the animal was licking itself. The accuracy of this gentleman's observations were vouched for by Professor M'Fadyean, who added that the bacilli were always "found to occur together with well-stained leucocytes and other cells derived from the lesions or the air passages."

In some of these cases the animals were obviously ill, but in the majority he states there was *no diagnostic* feature manifest. Thus cases 2, 3, and 6 were "in fair condition." Case 5 was "taking her food well and a grand milker." Case 8 was "seized at a fat stock show," and "was in good condition and had a glossy coat." Of case 9 the owner had said

that he had "never seen anything amiss with the cow, and that she was milking well." Case 11 was found "ravenously eating turnips."

The point to be accentuated is this—that in every case Mr. Riddock's diagnosis, based upon the microscopic examination of the expectorate obtained, was confirmed by post-mortem examination and by other means.

I am therefore of opinion that this is an important addition to the means at our disposal for the detection of tuberculosis, and may, in a certain class of cases, namely, those in which the lesions are in connection with the respiratory organs, be of great service to us.

Respiration.—In pulmonary tuberculosis the respiration often affords valuable indications of the diseased condition, as it becomes at first modified in rhythm and frequency, hurried, short, and interrupted; according to Professor Dewar the expiratory effort is prolonged and the inspiratory act shortened. Later, the breathing becomes still more quickened, short, and jerky, and is accompanied by a feeble, frequent, and painful cough. Finally, the animal stands persistently, and the shoulders are stretched apart to facilitate expansion of the chest.

Ascultation and Percussion are important methods of diagnosis.

The veterinary surgeon is, however, at a disadvantage in the use of the stethoscope, since the presence of the hair, the thickness of the skin and of the walls of the thorax, the dimensions of the organs to be examined, and the position of the shoulders, interfere with and disguise the sounds. The sounds of the rumen and the noises made by other cows in the byre, too, are disconcerting.

The results obtained, even under favourable conditions, very much depend upon the lesions existing in the thorax. The pleura, for instance, may be affected and covered with vegetations. In such a case the sounds would be dull, and friction murmurs might be observed.

Large tuberculous masses disposed in the superficial layers of the lung would be indicated on auscultation, by an absence of the vesicular murmur at their level, and on percussion by a dull sound.

Cavities produced by the opening up of a tuberculous mass into a large bronchus might be detected by cavernous breathing and splashing sounds (better heard with the aid of the phonendoscope), and by tympanitic resonance on percussion.

Where the lesions are scattered throughout the lungs percussion fails to discover the change; auscultation obtains the vesicular murmur all over, but of a coarser nature than usual.

For the better detection of tuberculosis it has been suggested that forced breathing should be induced by covering the nostrils and mouth of the animal to be examined with a cloth. The injection of pilocarpine serves a similar purpose, and renders the friction sounds in cattle suffering from tuberculosis of the serous membranes more distinct.

When the progress of the disease is so far advanced as to render it ascertainable by auscultation and percussion, further constitutional disturbance is generally apparent. A gradual loss of condition, dryness of hair, and an altered condition of the skin, which becomes less supple and moveable and more adherent to the subcutaneous tissues, are noticeable. As the disease advances this dry condition becomes still more marked, and when the skin is pinched up into a fold it will remain in that position for some time. There is also intense depression and dejection, the eyes

are sunken, and the lids scaly and sticky. There may be a discharge from the nostrils, which accumulates, and a bad smell will be exhaled. It is not at this stage that the veterinary surgeon finds diagnosis difficult, and in fact, when tuberculosis has become so far advanced, death from asphyxia or exhaustion soon takes place.

The pulmonary form of tuberculosis may give rise to, and may be indicated by, *digestive disturbance*, attributable to compression of the œsophagus by the mediastinal glands. Diminished and capricious *appetite*, accompanied by irregular rumination and frequent *meteorism*, is sometimes the first thing noticed.

One very useful aid to diagnosis of tuberculosis in the human subject is the evening rise of temperature; this phenomenon has also been observed to occur in the ox, and one German writer lays particular stress upon it as a symptom of great diagnostic value. The more systematic use of the thermometer in animals suspected of the disease, and the more careful recording of the results obtained, would, in my opinion, be a step towards the elimination of many of the difficulties the veterinary surgeon has now to contend with.

Differential Diagnosis.—There are several diseases of the respiratory organs which are liable to be taken for tuberculosis. Theoretically it appears easy to differentiate between them, but in practice mistakes might easily arise if diagnosis were based solely upon clinical observation.

Verminous Bronchitis is a condition which in some respects simulates tuberculosis, but differs from it in the fact that it affects a number of individuals at one time, and in the characteristic cough which accompanies it. There may be no loss of condition or appetite, and no appreciable fever. On careful examination, it may be possible to detect the worms or their eggs in the mucus shot forth during the fits of coughing.

Chronic Bronchitis is a condition which may also be erroneously confounded with tuberculosis, and is difficult to distinguish from it even if great faith is placed upon the evidence afforded by auscultation. While in tuberculosis the inspiratory act is shortened and the expiratory act lengthened, the reverse is the case in chronic bronchitis. It is further stated that while the vesicular murmur may be heard during the entire expiratory effort in tuberculosis, in chronic bronchitis it is only manifest at the commencement of the expiratory act. Here again, I give the opinion of Professor Dewar.

Hydatids in the lung, such as echinococcus, may give rise to violent suffocating fits of coughing, though the healthy appearance of the animal may be maintained. *Débris* of the hydatid membrane are to be found in the material coughed up. A so-called "hydatid-fremitus" and area of complete dulness obtained on percussion are also described.

Actinomycosis must also be distinguished from tuberculosis. This is particularly difficult when it takes the form of small rounded tumours which infiltrate the lung. The microscopic examination of expectorate may prove the presence of the "ray-fungus." Of course it is quite possible for the two conditions to exist concurrently.

Contagious Bovine Pleuro-Pneumonia has given rise to mistakes in diagnosis. It may possibly be distinguished by auscultation, and the history of the outbreak may afford some assistance.

Foreign Bodies passing forward from the stomach also give rise to symptoms in some respects resembling those of tuberculosis. The fact that

serious heart symptoms often arise as a result of injury by a foreign body should not be lost sight of.

Lymphatic Glands.—I have already mentioned that tuberculosis of the mediastinal glands may give rise to digestive troubles. When other groups of glands become involved, further symptoms may be set up, such as difficulty in swallowing, salivation, nasal discharge, and shortness of breath, resulting from affection of the retro-pharyngeal glands. Examination of the submaxillary glands, those at the base of the ear, superior and inferior cervical, substernal glands and those of the shoulder, elbow, flank, groin, and udder, may show hypertrophy and induration, which characters may support a diagnosis.

It must be remembered that swellings caused by actinomycosis may be met with, but these, if occurring as a separate disease, generally yield to the action of potassium iodide, and such swellings have generally more than one point of adhesion to the overlying skin, whereas the swellings arising in tuberculosis most frequently adhere at one point only.

Abdominal Form of Tuberculosis.—Abdominal lesions occur with or in some cases independent of thoracic lesions. The intestines, and the glands, liver, kidney, and uterus, may all or any of them be involved.

In the early stages of the abdominal form the disease is perhaps even more difficult to diagnose clinically than in the pulmonary form, and the general condition and behaviour of the animal must be closely watched in order to detect it.

As the disease becomes more serious symptoms which should attract attention may be manifested, and notably is this the case when the genital organs are affected. *Nymphomania* is to be observed in cows; they bellow incessantly for the bull, and are covered without result; œstrum is prolonged and frequent, and with pregnant animals *abortion* may take place.

In some cases, by palpating the hollow of the flank, the hand being placed under the last false rib, hypertrophy of the sublumbar glands, and the presence of peritoneal "grapes" on the rumen and on the peritoneum which lines the abdominal wall may be detected.

Obstinate constipation, alternating with profuse diarrhœa, with occasional attacks of colic, are conditions which may be taken as suspicious.

One authority—Guittard—attaches great importance to *meteorism.* Where this comes on after a meal, but does not hinder rumination, in his opinion tuberculosis of the liver and its glands may be suspected.

With regard to *Tuberculosis of the Uterus*, Professor Bang states that "if a cow discharges putrid matter from the vagina, and if some months before it has cast a calf, then there is great suspicion that it is a case of tuberculosis. Sometimes it begins during gestation, and then, of course, the discharge will begin immediately after birth; but in some cases it develops itself slowly after the birth of a calf, and if a discharge is observed to begin slowly, and to go on developing for some months after birth, then there is every suspicion that it is a case of tuberculosis." The same authority is of opinion that rectal and vaginal exploration is of great value in diagnosis. He points out that tuberculosis may commence in the tubes and afterwards extend to the uterus, and should the uterus be found enlarged and hard it may be taken as evidence of tuberculosis.

In addition, he states that in some cases if the hand is placed in the vagina "the under side of the vaginal tube may be found much enlarged, and growths like thin fingers, larger close to the uterus and thin at the

other end, may be discovered." These occurrences, he considers, should serve to raise suspicion, which may be confirmed by microscopical examination of the vaginal discharge.

In 10 per cent. of tuberculous cows, according to German statistics, the uterus is involved.

Where abortion is occurring in a herd it may be necessary to decide whether it arises from tuberculosis or is merely premature birth brought about by mechanical injuries, chills, poisoning, partaking of food and drink containing fungi and other noxious material. It should be borne in mind that in cases arising from such causes as these it is often found that several pregnant animals have aborted about the same time, as the result of a common cause, the act taking place without any preparation of the genital passages.

Enzootic Abortion, too, is a disease in which, on account of its disastrous effects, a differential diagnosis is of vast importance. In this premonitory symptoms are observed, such as swelling of the udder and congestion of the vaginal mucous membrane, &c., and special characters are also found in the fœtal envelopes and the œdematous condition of the subchorial connective tissue, and it is to practical veterinary surgeons "a well-known fact that the after-birth of a cow that has aborted is uncommonly thick, slimy, and gelatinous, and that the removal of it is difficult owing to the ease with which the membranes tear." According to Bang, the "small vessels of the chorion are always more or less injected, and as a rule flakes of pus are adherent to the outer surface of the chorion, while these are always present between the villi of the cotyledons. The appearance of the placental cotyledons may be somewhat variable; most frequently they are strongly injected, not seldom hæmorrhagic. They are often of a dirty greyish-yellow colour, seldom, however, throughout their whole extent, more frequently in part only, and then either in the centre or at the edge, while the remaining parts of the same cotyledon may be red in colour."

Tuberculosis of the Udder.—Early diagnosis of this condition is of great importance in view of the use of milk for human consumption. As many as 2 per cent. of the cows in this country are stated to suffer from this disease. Tubercular mastitis may exist undetected for some time, its presence in the early stages being shown by a slight hardness and diffuse swelling, though unaccompanied by heat and pain. Usually only one quarter is attacked, generally one of the posterior quarters, and undergoes a gradual increase in volume and density, finally becoming tough and indurated. It is only after the udder has been involved for some time that the milk is appreciably altered. Gradually it becomes less in quantity, poor in cream, serous, and yellowish. Finally it takes on a whey-like appearance and contains strings and flocculi of a thicker material suspended in it. Later it may run dry altogether.

Associated with the tuberculous condition of the udder there is enlargement of the supramammary lymphatic glands.

It has been suggested that the detection of the tuberculous udder might be achieved by harpooning out a piece of the affected part, and submitting the same to microscopical examination. This method has not, however, been found practicable.

Tuberculous mastitis must be differentiated from other forms of mastitis.

Generally speaking, it is found that in these other forms the milk undergoes profound changes at an early stage. Secondly, there does not appear to be any tendency for the posterior quarters to be involved rather than the anterior. Thirdly, they are generally associated with a hot and painful condition of the udder and general symptoms of fever in the patient.

The insidious onset of tubercular mastitis is remarkable, and the resulting swelling of the quarter which is tuberculous tends to increase, while in cases recovering from so-called "weed" the quarter tends to shrink.

Milk.—The detection of tubercle bacilli in the milk is important, not only on account of its diagnostic value, but because of its bearing on public health. Except where the lesions of the udder are extensive, examination of the milk may fail to demonstrate the bacilli, which are perhaps present in small numbers only, in a large quantity of liquid.

By centrifugalising the suspected milk, however, the bacilli fall to the bottom of the tube, from which they may be taken and submitted to microscopical inspection.

Staining.—I have in the course of my paper more than once alluded to microscopic detection of the bacillus, and at this point I take the opportunity of recalling to your memory the Ziehl-Nielsen method of staining, which is perhaps the best one to employ.

The formula for this solution is—

Alcohol, 10 parts.
Solid fuchsin, 1 part.
5 per cent. aqueous solution of carbolic acid, 90 parts.

It stains the tubercle bacillus in ten minutes at ordinary temperatures.

After staining, the film may be transferred into a 25 per cent. solution of strong sulphuric acid and water for a few seconds, and is then rinsed in water.

It is again stained, this time in aqueous methylene blue, washed again, and dehydrated in alcohol.

The tubercle bacillus should stain red, nuclei and other accidental bacteria having a blue colour. Certain acid-fast saprophytes— the "butter bacillus" of Robinswitsch, the "grass bacillus" and "manure bacillus" of Moeller—must not be mistaken for the tubercle bacillus.

By this method of staining it may often be possible to discover the bacillus in the discharges from the nose, vulva, and udder, in the pus from suppurating tumours, abscesses, and in particles abstracted from enlarged mammary and lymphatic glands.

When one is possessed of the necessary licence confirmatory evidence may be obtained by the inoculation of guinea-pigs with the sediment, either subcutaneously or intraperitoneally, if the milk is known to be fresh.

If the material is inoculated in the skin of the inner side of the thigh, after some days the lymphatics in the bend of the flank become enlarged and indurated. Material from these may be taken for microscopic examination.

The agglutinating power of tuberculous serums and effusions was pointed out by M. Arloing in 1898. A homogeneous culture of Koch's bacillus in glycerinised broth is obtained. This is placed in narrow glass tubes, and mixed with serum in certain proportions. As a result of experiments on

cattle it has been found that, whereas the serum of a calf possesses feeble powers of agglutination, and that of an adult cow the same powers in a slightly greater degree, the serum of a tuberculous animal possesses in a marked manner the power to agglutinate and clarify a culture.

Although this method may prove of great value where there are adequate laboratory appliances at hand, it has not, up to the present, become of practical value to the general practitioner.

Tuberculin.—I am unable to deal with this as fully as I should like, for it is of sufficient importance to merit a paper devoted entirely to its consideration.

Tuberculin was discovered by Robert Koch towards the end of 1898, and was hailed with excitement as an agent capable of healing tuberculosis, and of "denouncing the presence of tuberculous lesions inaccessible to other methods of diagnosis." Unfortunately the use of tuberculin as a cure has not justified the expectations formed of it; but, on the other hand, in spite of years of criticism and opposition, as a diagnostic agent it is still acknowledged to be "of quite remarkable accuracy."

In the first place, tuberculin is the "sterilised and filtered liquid-culture of tubercle bacilli." It does not contain even dead bacilli, but it has in solution certain substances which are added to the liquid by the bacilli during their growth. In its use certain precautions are of vital importance. The actual condition of the animals upon which the experiment is to be performed must be taken into careful consideration. Change of food, pasturage, and surroundings, and in the general management of the herd, should be avoided for some days before the experiment. The animals to be tested should be protected from draughts, and should be kept quiet and undisturbed. After the injection they should not be allowed to drink large quantities of cold water during the period in which the reaction is likely to be shown. Cows showing symptoms of œstrum are unsuitable subjects for the test.

It is advisable to take the temperatures of the animals morning and evening for several days before the injection, keeping in mind the fact that oscillations of the temperature, due to the influence of some temporary ailment or pathological condition, may be a source of error.

It is well to take the animals' temperatures at least once on the day preceding the test.

The dose of tuberculin for a medium-sized animal is 3 cubic centimetres, and it may be varied above and below that according to the size of the animal. Large bulls ought to receive 4 c.c.

Having sterilised a hypodermic syringe by boiling it in water for five minutes before use, the whole dose must be injected into the subcutaneous connective tissue in front of the shoulder or on the wall of the chest behind the point of the elbow.

A certain time generally elapses before a reaction follows the injection of tuberculin. Professor Shütz says the length of time, which varies, "can be likened to the incubative period of infectious diseases." When once the sensitiveness to tuberculin has set in, the temperature rises, and after reaching its maximum generally falls gradually to its original point. It is for this reason advisable that the temperature be taken at the time of injection, and at the ninth, twelfth, fifteenth, and eighteenth hours afterwards, in order that the reaction may not be missed.

In the directions for using tuberculin issued by the Research Laboratory of this College it is stated that animals in which the temperature during

the eighteen hours following the injection rises gradually to 104° F. or more, may be classed as tuberculous, and those in which it remains under 103° F. as not tuberculous. When the maximum temperature obtained is under 104° F. but over 103° F. the case should be considered doubtful and the animal re-tested after a month. When an animal has been inoculated with tuberculin a toleration to the action of the agent is produced, so that for a certain period no reaction is obtainable even though the animal be tuberculous. This is a fact well known to unscrupulous cattle-dealers and others, who in order to hide the diseased condition of their animals and to circumvent the inspector inject tuberculin previous to the examination. This is a feature which threatens to greatly reduce the value of tuberculin as a diagnostic, and for which there are two obvious remedies; the first is that tuberculin should be controlled, and none but qualified veterinarians be allowed to use it; and the second, that all suspicious animals which fail to react should be quarintined and re-tested in a certain time. For a similar reason in recently purchased animals the application of the test should be delayed, say, for a month until it is nearly certain that (should a previous injection have been made) they have recovered their aptitude to react.

Time does not allow me to discuss at length the arguments for and against the use of tuberculin. Naturally it has not been altogether popular among farmers and cattle-dealers, the effects produced by its discovery having been many instances disastrous from their point of view. The increased facilities for the detection of tuberculous animals lowers the value of their stock. Several foreign Governments have of late years insisted upon the test being applied to all cattle imported.

It has been claimed in the first place that tuberculin may produce reactions in non-tuberculous animals, though the supporters of the test have answered this by the suggestion that "if occasionally the lesion shown by tuberculin is not found, it is because the search for it has been insufficient and the autopsy incomplete." In addition to this argument the failure to obtain any reaction in Channel Island cattle, which are naturally free from tuberculosis, is to say the least remarkable.

Again, it is urged that "tuberculous animals may not react to tuberculin," against which it is asserted that this is only the case when the suspect is highly tuberculous, and in such a case there is no need for tuberculin, the clinical signs alone being sufficient.

Tuberculin has also been accused of causing abortion, rendering bulls impotent, and injuriously affecting the health. In opposition to these accusations I may recall the circular issued by Professor M'Eachran to the inspectors throughout Canada, in which he asked for replies to the following questions :—

1. Do you know of any case in which the use of tuberculin has caused abortion?
2. Do you know of any instance in which a bull has been rendered impotent by the use of tuberculin?
3. Do you know of any case in which the general health of the animals has been injured by tuberculin?
4. How many cattle have you tested during the year?
5. How many post-mortem examinations have you witnessed of animals condemned in consequence of having reacted to the test?
6. In how many instances did you fail to find tubercle?

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The first three questions were unanimously answered in the negative. The aggregate answer to the fourth was over 22,000, and to the fifth 579. The answer to the sixth was ten and one doubtful case. Thus, out of nearly 600 post-mortems in only eleven instances was the accuracy of the test placed in doubt.

Professor M'Fadyean distinctly says that tuberculin does not affect the milk in any way.

There are various sources of error in the use of tuberculin; one is that it becomes old and ineffective. Another is the hurried and improper performance of the operation and the unsuitability of the animals to undergo the test in consequence of some temporary derangement.

Again errors are made at post-mortem examinations, and in many cases the operator is not one capable of interpreting the facts.

In my opinion these are defects which, with a little management, might be remedied.

The first would be overcome were it recognised that tuberculin should only be used by proper authorities, and the second might be minimised were its use restricted to duly qualified men — preferably veterinary surgeons. These last would be best able to judge whether animals were in a satisfactory condition for the test to be applied; and since tuberculin is of little value without the brains of the operator to interpret its indications, I am therefore doubly convinced that the veterinary surgeon is the best qualified person to employ this undoubtedly valuable agent.

Gentlemen, to deal fully and exhaustively with our subject, within the limits to which a paper such as this must necessarily be confined, is of course out of the question, and I have been obliged to omit a number of points upon which I should like to have touched. I hope, however, that my effort to present a survey of the subject as comprehensive and at the same time as detailed as space will permit, and, secondly, to afford food for discussion, has achieved some measure of success.

It is not likely that all of us will become inspectors, or that every one of us will attain the proud position of Veterinary Officer of Health, but we all have one duty to perform,—the education of the public mind in matters which affect not only the welfare of human beings, but the welfare of those whose especial guardians we are, namely, the lower animals.

Translations and Extracts.

UNUSUAL CASE OF OSTEO-MYELITIS IN A FOUR-YEAR-OLD HORSE.

BY M. P. CHENOT, VETERINAIRE EN 1ER ALGIERS.

OSTEO-MYELITIS, although well known in the human being, has been but rarely described in veterinary medicine, and on this account the case appears to be worthy of recording.

On June 6th I was called in a consultation with a civil practitioner, M. D———, to examine a four-year-old barb that was described as having been very ill for the past three months. He was greatly valued by his owner, who was willing to go to any trouble and expense about him. At the end of February the horse, who was high-spirited while being taken to

the forge by an Arab groom, took fright, and backed with great force against a wall. He at once became very lame, but no injury could be discovered. He was taken on very slowly to the forge, 400 or 500 yards away, and the lameness disappeared. The farrier, hearing what had happened, looked the horse over carefully, but, to use his own words, "there was not a hair displaced," and the horse when trotted went perfectly sound. He was shod on all four feet without showing any signs of inconvenience, and the next day, as he still remained sound, was put to work in harness. He continued well till May 13th, when it was noticed he did not feed, had an anxious look, was blowing, and had difficulty in moving out of his stall. He, however, did his usual work next day, and was in good spirits. On returning to the stable he appeared to be again taken ill, and was seen by a veterinary surgeon, who diagnosed laminitis in all four feet and bled him. The next day there was no change, the pulse was quick and hard, respiration quick, and flanks tucked up, feet and limbs cold, ears hot, and appetite completely gone. A careful examination revealed nothing wrong with either the lungs or intestines. M. D——— was unable to discover the cause of the fever, which there was nothing to account for, and again carefully examined the horse. While standing the position was normal, except that he seemed to be constantly lifting up one limb after the other, and to be in great pain. When moved at a walk the hind limbs were stiff, especially the left, and the horse could not trot, refused food, pulse 60 to 65 per minute, the artery full and tense, conjunctiva injected, stiffness of the loins and back, constipation and dysuria, and later on a swelling over the left hip was noticed.

All the shoes were removed, a blister applied over the thigh, and purgatives and diuretics given at first with some good effect, but the animal became worse, and on June 6 I first saw him.

He was in a most depressed state, standing with his head down, eyes half closed, conjunctiva infiltrated, and both it and the buccal membrane pale, hot, and dry. The pulse was 68 per minute, and the respiration 16 to 18, the respiratory murmur being somewhat exaggerated. The sounds of the heart were metallic, feeble, and irregular, and at the base the soft, short sound indicative of anæmia. The temperature was 40 Cent., and the condition very bad.

The muscles of the near hind limb had greatly wasted, especially on the quarter, but it did not appear to interfere with his putting his weight on it. As long as its fellow when he was standing easy. The left tibia at its upper two-thirds was larger than the right, and painful on pressure, but the exact locality could not be made out. It was also flatter than its fellow, and this could be particularly noticed where the bone was close to the surface. The stifle joint was swollen, which could clearly be seen to be due to enlargement of the head of the tibia and inflammatory action in the surrounding cellular tissue. The case was diagnosed as being "diffused osteo-myelitis, and a bad prognosis given.

Treatment.—The patient was slung, put on a milk diet, taking 8 to 10 litres daily, and given saline subcutaneous injections, 7 per 1000, six litres divided into three injections daily. On June 7th there was improvement—temperature 39·1° Cent., pulse 58 to 60, and respiration 15 per minute, the latter easier. The swelling at the stifle, however, had increased, but the animal stood equally well on each hind leg, although he kept constantly shifting his weight. He resisted manual examination of the part, and percussion of the bone, where only covered with the skin, caused great

pain, although none was evinced on the corresponding parts of the other limb. No fluctuation could be clearly detected, although it was suspected just behind the flexor metatarsi on the outside of the lower third of the limb.

June 11.—The temperature rose to 39·7° Cent., and the patient was very much worse. At the lower third of the thigh the skin was somewhat œdematous and mapped out with dilated veins. An exploratory puncture was made without result. June 15.—Morning temperature 38·2°, evening 38·6° Cent. The saline injections were stopped, and a seton passed through the swelling on the thigh. June 17.—Morning temperature 38·4°, evening 38·7° Cent. The seton was removed, and the part syringed out with oxygen water. The patient was led out a few steps, and noticed to have improved. The milk was reduced to 4 litres, and 2 litres of barley with a small quantity of green food given, which he ate with relish. June 29.—Morning temperature 39·3, evening 39·4 Cent. The appetite was lost, and the emaciation had increased.

For the first time the lower part of the thigh was noticed to be swollen, but this was confined to the space between the perforatus and the gastronemic tendon; and when the limb was semi-pendent fluctuation could be detected, more especially towards the outside. The enlargement was in the shape of a pear with the base downwards, and was situated 2 to 2½ inches from the point of the hock. Above and outside it was lost in the muscular tissue of the perforatus and lateral extensor of the phalanges; inside it was bounded by the perforans and ham string. It was not hot or tender on pressure, and had the feeling of a synovial bursa.

On June 21st it was punctured, and about 400 grammes of a clear greyish-yellow fluid removed, the cyst being filled with antistreptococcic serum. The fluid was examined by Dr. Busquet, who found it to be absolutely sterile, and this fact pointed to the disease being hypertrophic nervous ostitis.[1] According, however, to Bloch, "between even acute ostitis, abscess in bone, and neuralgic osteomyelitis there is no pathological difference, only one of degree." And in his voluminous treatise *Heydwreich* only devotes one chapter to abscesr in bone, false abscess, and neuralgic ostitis.[2]

June 22nd.—Temperature 37·7 Cent. The cyst has not filled, and the patient has slightly improved. Antistreptococcic serum injections and massage ordered.

June 23rd.—The patient is much worse, but without any further local lesions. He is more emaciated, suffering great pain, and no appetite. He is only kept alive by nutrient enemas every four or five hours.

June 24th.—Temperature—Morning, 38·9°; evening, 38·3° Cent. A remarkable degree of pœcilocytosis; in both fresh and stained blood films red corpuscles of all shapes and sizes could be seen.

June 25th.—The white corpuscles have largely increased in number. Temperature 40·2° Cent. Most probably there is acute leucemic lymphadenoma from rapid proliferation of the lymphoid tissue of the entire

[1] Lannelongue et Achard. Ann, Pasteur tv. page 209; Archives de médecine experimentale, 1892, page 127; and Chantemesse et Vidal Societé Médicale des hopitaux, 1893.

[2] P. Mauclaire microbian Osteitis Th. page 532; Traite de Chirurgie Clinique et operatoire de La Dento et Delbet and Cadiot et Almy Therapeutique Chirurgicale des animaux domestiques, page 496.

hematopoietic system. Blood films stained with phenate of solole thionine show the hæmatic elements of a bottle green (probably from the action of the oxyhæmoglobin) and the leucocytes a violet blue. The addition of 1 per 10,000 eosin gives a triple stain.

Solale thionine is prepared with—

Alcohol, 95°, . . .	10 grammes.
Salol, ...	0·30 grammes.
Thionine (Poulene's), . .	1 gramme.
Glacial acetic acid, . .	1 gramme.
Distilled water, . . .	100 grammes.

Filter after standing for two days.

June 26th.—The animal was destroyed.

Post-mortem.—Muscles normal. Intestines nearly empty. Mesenteric glands enlarged, and a greyish-pink colour—some the size of a large olive. Lungs and heart normal.

The hip joint contained a quantity of yellow synovia. The capsular ligament was thickened. At the stifle below the insertion of the perforans was a cyst that was quite independent of the articulation that contained a fluid identical with that obtained by the exploratory puncture. The cyst was bounded above and at each side by a gelatinous membrane $\frac{1}{4}$ to $\frac{3}{8}$ in. thick, and was in intimate connection with the periosteum; in fact, it appeared to be a subperiostic abscess in process of formation. The stifle joint was normal in appearance, only the membrane had on its surface a few red filaments. The left tibia was enlarged, particularly at the upper part, and weighed 915 grammes, against the right, 835, a difference of 75 grammes.

In longitudinal section the medullary canal was much reduced in size, especially at the upper third, and the contents were much harder and more consistent than normal. At the upper part, where it was densest, it was a reddish brown or maroon colour, at the middle of the bone a bright red, and at the lower end yellow.

Scrapings of the areolar tissue from the upper end were distinctly purulent, and in specimens both fresh and stained with phenate of thionine, deformed red corpuscles, pus, and streptococci were seen.

Sections of both tibia were made for comparison, and no doubt the inflammatory process, which increased the density of the bone without adding to its dimensions, was the cause of the great pain that existed.

The left femur was implicated in the same manner, although it was not suspected during life, but only the trochanter was enlarged. The left one weighed 1200, the right 1155 grammes.

In the human being osteo myelitis is a disease of infancy and youth, consisting of inflammation of the embryonic elements of the periosteum and medullary canal, caused by the staphylococcus aureus (Garnier and Delamarre); but in this case it is difficult to see any channel of entry, and to fall back on the theory of latent microbism roused into activity by the contusion. The horse six months before had had strangles, and the presence of the streptococci in the areolar tissue of the bone can be accounted for by Verneuil's theory. It would appear, however, that osteo-myelitis is not so rare in the domestic animals as is generally supposed.

(*Recueil de Médecine Vétérinaire.*)

AFTER EFFECTS OF NEUROTOMY.

BY PROFESSOR J. VANNERHOLM, VETERINARY SCHOOL, STOCKHOLM.

THE records of the Stockholm School show that between the years 1889 and 1901 520 neurotomies were performed, viz.—66 medium, 18 capital (either conjointly with the medium or subsequently on account of the lameness continuing), 357 plantar, 30 sciatic, and 29 external popliteal. These latter were all done at the same time as the sciatic. The author, in summing up the notes of these cases, arrives at the following conclusions :—

I. MEDIUM NEUROTOMY.

The operation is indicated in cases of chronic sprain (nerf ferure) and synovitis of the sheath of the flexor tendons, or periostitis of the fetlock joint or suffraginis, but always providing that all other means, and more particularly actual cautery, have proved to be useless.

The wound heals rapidly, but seldom by first intention, on account of the great mobility of the part and the difficulty in applying a proper bandage and dressing. At the Stockholm school it is the practice to only suture the upper portion, and to use a drain of iodoform gauze at the lower part, but even then the œdema is so extensive that it is often necessary to remove the sutures the next day or the day after. Neuroma are exceedingly rare, and the author has only seen one case. Although no doubt the operation permits of animals being worked that otherwise would be useless, the author's experience is that sooner or later chronic lameness sets in, on account of induration and sclerosis of the tendon, also the union of the ends of the nerve. In addition there are certain dangers in the operation, and the author truly remarks that it is only one to be had recourse to as a last resource.

II. PLANTAR NEUROTOMY.

Double high neurotomy is frequently performed at the Stockholm School even in cases of navicular disease, which up to the present has been looked upon as one in which the low operation should be resorted to.

The author gives his reasons for his preference for the high operation.

A. Daily experience shows that the low operation does not remove lameness even in clearly defined cases of navicular disease. The cause of this is the extensive ramifications of the plantar nerves towards the coronet, pastern, and even the hoof, which convey sensation even if the main trunk is divided below the fetlock.

B. The high operation is the easiest to perform and least dangerous.

As a general rule the success of plantar neurotomy is in the inverse of the amount of lameness, as this is in relationship with the pathological condition giving rise to it, as, for example, a case of navicular disease with great lameness. In such it is reasonable to conclude that there is serious disease of the plantar aponeurosis or navicular bone—one being subject to rarefied ostitis, and the other to degeneration and disagregation of the fibres. A case of this class that is operated on before the effects of the lesions are counteracted by induration of the tendons becomes freer in action, and is exceedingly likely either to rupture the aponeurosis or fracture the navicular bone.

The conclusions arrived at are, that high double neurotomy is indicated in either recent or chronic navicular disease if there is not great lameness,

and there is reason to think that serious alteration has not taken place in either the plantar aponeurosis or navicular bone. The same indications apply to sidebones.

With regard to arthritis, exostosis, and periostitis of the coronet, the author gives a word of warning about the excessive bony growths that are sometimes the consequences of neurotomy, causing anchylosis of the fetlock or coronet joint, or gangrene of the plantar aponeurosis.

He speaks with great praise of the high operation in sandcrack, whether it be dry, bleeding, or suppurating, and has seen wonderful results in bad cases, but careful antisepsis is essential.

When the operation of abalition of sidebone or resection of the plantar aponeurosis for penetrating gathered nail has been necessary, if there is still lameness, the high operation is indicated, only in the latter he advises that it should be postponed till the cicatricial tissue that replaces the excised portion of the aponeurosis has sufficiently matured to support the strain of the freer motion of the limb. On the contrary, it is contraindicated in either acute or recent laminitis on account of the danger that exists of the hoof being shed.

III. SCIATIC NEUROTOMY.

Indicated in chronic inflammation of the flexor tendons, and generally has been successful in the author's hands. He, however, notes that although at first it gives relief, in the majority of cases neuroma form.

IV. ANTERIOR TIBIAL (PERONEAL) NEUROTOMY.

In the Stockholm School this operation is only performed for lameness resulting from spavin, when all other treatment, and especially the actual cautery, have failed.

He advises that it should not be performed for two or three months after the application of the cautery. Many practitioners lose patience and do not wait, whereas the results of the cautery, particularly the pyro-puncture, are sometimes not manifested for some months.

The operation wound heals but slowly on account of the great mobility of the part, and it is usually six to eight weeks before the horse can be put to work, but on the whole for old spavin lameness it is generally successful.

CONCLUSION.

Vennerholm is of opinion that in towns and large studs of horses where prolonged rest means loss to the owner neurotomy can be employed successfully. He, however, goes on to say that the operation may be practised for fraudulent purposes, and considers that veterinary surgeons should take care to leave an indelible scar on such patients.

(*Zeitschrift für Thiermedicin*, 1903.)

PERIOSTITIS OF THE ANTERIOR SURFACE OF THE FIRST PHALANGES OF THE FORE LIMB IN THE HORSE.

BY DR. C. ALBERT, BERLIN VETERINARY SCHOOL.

THIS condition is very common in the surgical clinic at the Berlin School. In 1903 it was found to exist in 187 out of 8467 animals attending. It is characterised by inflammation of the periosteum and surface of the bone,

followed by the formation of osteophytes, the interspaces being filled up with a layer of fibrous tissues that makes a smooth surface for the tendons to play over. In order to study the form of the exostoses it is necessary to first remove the soft tissues from the specimens by boiling them in an alkaline solution.

In slight cases, as those in which the process is only commencing, the surface of the bone has slight elevations either in points or lines on it, giving it a roughened appearance. Then exostoses increase in size and number, sometimes becoming large and extending over the whole of the upper part of the bone, and sometimes over the sides, occupying usually the triangular space in which the extensors of the phalanges are inserted, although sometimes they are found on the lower third or even over the whole of the anterior surface of the bone.

The inflammatory process may commence in the periosteum, but more frequently in the bone itself, and the periostitis is a secondary complication, but in the latter stage the two are the same, the result being firm adherence between the bone and periosteum, with hypertrophy and deposition of lime salts in the latter. This newly formed tissue is clearly distinguishable, from the bone having large and irregularly shaped canals, and readily stains with any dye.

The causes of this periostitis are many, both external and internal. Amongst the first are concussion, kicks and blows, sprains, bad shoeing, and wounds; predisposing causes are faulty conformation, hard work, and fatigue. The causes of its localisation on the upper third of the bone are over-extension of the extensor tendons on the lower third and surface from blows and wounds.

The symptoms are—when at rest the limbs are advanced, flexed, and resting on the toe; when moving it is but slightly raised; the pace is short, and the foot is put on the ground as short a time as possible. Lameness increases with exercise, and the pain is in some instances so great that the horse stands with his foot raised and will not put it on the ground. On examination an oval-shaped thickening, that is ill defined, will be noticed on the front of the pastern, which at first is hot, painful, and fairly firm, but later on becomes as hard as bone.

The author advises that the limb be lifted up, grasped in the hand with the thumb in the hollow of the pastern, and the finger over the enlargement and the part suddenly pressed. Great pain will be caused; but only over the implicated part, there is no throbbing of the plantar arteries.

This form of periostitis is often mistaken for fracture of the coffin bone, and possibly may account for the latter being looked upon as not a very serious accident, but the author thinks that periostitis is common and fracture of the third phalanx rare, and that if it does occur it is as serious as any other bone. He states that with periostitis a cure will take place in from four to eight weeks, but a fracture will be much longer.

If neglected, the inflammatory action will become chronic, but if treated at the commencement, when the exostoses are small and few in number, the prognosis is favourable.

He advises the part should be shaved and a blister applied, with puncture firing if necessary, the part to be enveloped in a tow bandage, which is allowed to remain on for three or four weeks, and then an absorbent ointment to be used. A cure may be looked for in from four to eight weeks.

(*Monatsh. für Prakt. Thierheilk.*)

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TORSION OF THE RECTUM.

BY M. A. CHANIER, VETERINAIRE EN 2EM 4EM HUSSARS, FRENCH ARMY.

THE attachments of the rectum are so numerous and strong in the domestic animals that torsion of this part of the intestine is a rare accident, hence the reason for publishing this case.

The patient, an eleven-year-old mare, was attacked with colic on 28th July 1903, at about 8 P.M. She had eaten her evening feed at 6 o'clock, and the stable guard said he had seen her roll in her stall. She was taken to the infirmary at 8.30, and the farrier on duty had given an enema, had her well wisped, and walked about in clothing.

I saw the mare at 9.30 P.M. The abdomen was somewhat tympanitic, the spine arched, no difficulty in walking, and not inclined to lie down. The face was slightly pinched, and every now and again she lowered her head, and opened her mouth as if about to vomit. The pulse was regular and strong, the mouth hot and dry; refuses food.

No fæces had been passed since 6 o'clock. The first enemas were slightly discoloured, but the others were returned in the same condition as given, Nitrate of pilocarpine; 0.10 grammes was given subcutaneously without any result. At about 10 o'clock the mare began to raise her head and turn up the upper lip at frequent intervals; at 10.30 another enema was given, which was almost at once returned unstained; and at 11.15 another dose of pilocarpine, which had, like the first, no effect. At midnight the patient lay down cautiously on her right side, but got up at once, and as soon lying down again; she made several attempts as if to get on her back, but never assumed this position completely.

At 5 A.M. great pain came on, with tympanitis. The intestine was punctured, giving exit to a small quantity of gas.

On rectal examination the anus was very contracted, and the hand passed with difficulty; the lining membrane was in folds, and covered with mucus. Near the orifice to the right there was a round hard mass, which was thought to be the pelvic curvature of the large colon, but which subsequently proved to be a loop of the floating portion, and 8 to 10 inches further forward the hand came into a blind pouch, which was recognised to be the folds of the floor of the rectum turned from right to left. On the upper part were the same folds in the reverse direction, and, following them through the arc of a circle 360 degrees, the finger passed into the strangulated portion, at the other side of which was a hard pellet of fæces. The case clearly was one of volvulus at the point of junction of the floating colon and rectum from left to right—the twist being a complete return. An attempt was made to reduce it without success.

The temperature at this time, 6.30 A.M., was 35·7° Cent., the pulse full and strong; respirations 30 per minute.

At 7.30 the patient lay down on her right side and rolled over on her back, remaining in this position for a considerable time. She also sat up on her haunches like a dog.

At 10 A.M. a second examination was made, but the condition was worse; the folds of the rectum were more tense, and manipulation was painful; the finger still could be passed, but with difficulty. A gutta-percha tube was passed, and an attempt made to soften the pellet of fæces by a douche, but it was unsuccessful and caused great pain; hydrochlorate

of morphine, 0·74 grammes, was given. The animal died quietly at 12.15 16 hours after the commencement of the attack.

POST-MORTEM.

The lesions were—1. Torsion of the rectum; 2. Intestinal congestion; 3. Enlargement of the stomach; 4. Asphyxia.

1. *Torsion.*—At the entrance to the pelvis the posterior portion of the floating colon was found rolled over on itself in two spiral twists, and on raising up the uterus the rectum in the same condition from right to left. The floating colon was full of hard pellets of fæces, but the rectum was empty. The mucous membrane of the rectum was congested, and over the twist were two dark, diffused patches—one the size of a sixpence, the other a half-crown. The mucous membrane of the floating colon was likewise somewhat congested, thickened, and softened.

2. *Intestinal Congestion.*—The small intestine was empty, but in places distended with gas. The anterior portion of the jejunum was slightly congested, also the mesentery, on which were a number of large patches of ecchymosis, which corresponded with those of the intestine. The cæcum and large colon were loaded with ingesta.

3. *Stomach.*—The stomach contained about 15 litres of dry food, consisting of oats and chaff. The gastric mucous membrane was congested.

4. *Asphyxia.*—Both lungs, but particularly the left, were engorged with black coagulated blood that slightly reddened on exposure to the air. The mucous membrane of the bronchii was of a deep red colour, thickly studded over with hæmorrhagic spots; that of the trachea was normal.

The substance of the heart, the connective tissue round its base, and endocardium were studded with petechiæ, and under the latter were two large ones at the orifice of the pulmonary artery. These petechiæ were also scattered over the pleura—especially the left, the left side of the thoracic face of the diaphragm, the bronchial glands, spleen, and renal connective tissue, especially at the hilum. The kidneys were congested, the bladder empty, and the liver engorged with black blood.

Pathology.—In all probability the torsion was secondary to the attack of colic, and although there is no evidence, it is only reasonable to think that the patient had been rolling before she was taken to the infirmary, and thus caused the twist; but, in any case, it must have been present before seen at 9.30 P.M. The lesions of the small intestine can only be looked upon as being secondary, as the first symptoms pointed to gastric indigestion, and it appears that the course of the attack was—

1. Gastric indigestion, caused by engorgement with a large quantity of food, distention, and paralysis.

2. Congestion of the epiploon, mesentery, and part of the intestine supervening on the gastric trouble.

3. Torsion from rolling during paroxysms of pain. Contrary to the experience of most observers, there was very little congestion at the seat of the twist, which can be accounted for by its being incomplete, and to a certain extent permitting the blood to circulate.

(*Recueil de Médecine Vétérinaire*, April 30, 1904.)

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THE DIAGNOSTIC AND THERAPEUTIC ACTION OF INJECTIONS OF COCAINE AND COCAINE AND MORPHINE OVER THE COURSE OF THE PLANTAR NERVES IN THE HORSE.

BY M. PECUS, COMMUNICATED TO THE PARIS CENTRAL VETERINARY MEDICAL SOCIETY BY M. DESOUBRY, 10TH MARCH 1904.

GENTLEMEN—I have the honour to bring to your notice a paper by M. Pecus, on the diagnostic and therapeutic action of injections of cocaine and morphia and cocaine on the plantar nerves of the horse. Two cases of lameness that have been cured are given.

M. Pecus says—"We are already aware of the diagnostic and curative values of injections of ether on the plantar nerves carried out by M. Gagny, and those with chloroform by M. Geell, and cannot help being struck by the physiological difference in the action of both, and the alteration in the nervous excitability, viz., that a nerve exposed to chloroform vapour for a minute completely loses its excitability and does not recover it, whereas under the influence of ether it quickly recovers, and the question arises whether the fact could not be made use of to avoid having to perform neurotomy and all its attendant disadvantages. Unfortunately the advantages given by chloroform in actual practice are not so great as might have been expected from laboratory experiments, and the idea of altering the nerve by chemical agents has to be abandoned except for diagnostic purposes."

Bearing in mind the high price of cocaine, the author has had recourse to Schleich's mixture of cocaine and morphia, and uses the following formula for injection over the plantar nerve.

Hydrochlorate of morphia, .	0·10 grs.
Cocaine, ...	0·15 „
Diluted water, ...	5· „

This mixture of cocaine and morphia not only possesses marked local anæsthetic properties, but also those of curing lameness in a time varying from one to twelve days after the injection. M. Pecus shows that this is not, however, infallible, and in addition to successful also mentions his unsuccessful cases.

I will only comment on some of the most striking cases. Case No. IV. was a six-year-old hunter that had been lame for six months on the near fore. An injection of cocaine and morphine was given over the fetlock joint on 9th September 1898, the lameness disappearing in about ten minutes, reappearing the next day. The third day the mare was sound, and remained so till June 1899, when she again went lame. The injection was repeated, but without success, when neurotomy was performed with good results.

Case No. VI.—Mare, six years old, went lame on the off fore on 16th February 1898 from no apparent cause. On 16th March an injection of cocaine and morphia was given at the fetlock joint. Forty-eight hours afterwards the lameness had much diminished, and on the 19th she was workably sound. On 9th May she went lame on the near fore. On 10th June the injection was repeated. The mare was very lame till the 14th, but sound on the 16th, and remained so for three years.

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Case VII.—A nine-year-old mare went lame on the near fore on 6th May 1899 from ostitis of the pastern. On 6th June received an injection over the fetlock joint; the next day the lameness was greater, but disappeared on the 11th. She remained sound till 8th February 1900, by which time a ringbone had formed. On 14th January 1901 the injection was repeated and the lameness disappeared in seven minutes. The next day she was very lame, but sound on the 17th. She returned to work on the 28th, and continued so for eight months.

There are a number of similar cases, but M. Pecus' last will suffice. The patient was a show jumper, and for eighteen months had been lame on the off fore. He had been puncture fired without success on the pasterns, and on 30th September 1901 received the injection. The lameness disappeared in a few minutes, but the next day was worse. On the 3rd October he was sound. He was not put to work till the beginning of November, beginning early. At the end of December he jumped a fence 5 feet high, and galloped 3500 metres, and in 1902 won a prize at a show.

M. Pecus also gives some remarkable cases with cocaine alone.

Case XIV.—An officer's horse, lame for a long time on the off fore, received an injection at the fetlock on 7th June 1897. In four days the lameness had disappeared, and has remained sound since.

Case XV.—A mare recently purchased as a remount went lame while being broke on 3rd May 1901. On 10th received an injection of cocaine, when the lameness at once disappeared. On the 11th she was still slightly lame, but trotted sound on the 13th, and went to work on the 14th. She remained sound till July 15th, when she again went lame from a sidebone.

A case came under my own notice that is worthy of mentioning, belonging to a tradesman in Versailles, that in July 1901 received a wound on the shoulder a foot long. It was stitched up, and healed without any further trouble. In 1902 the horse went lame on the same limb, and the owner insisted that the lameness was in the shoulder, due to the former injury, whereas my opinion was that it was low down. On the 15th March, after the shoulder had been treated by the owner, he allowed me to inject cocaine at the fetlock. The lameness at once disappeared, but returned the next day, gradually disappearing by the 8th, when, on my advice, neurotomy was performed.

The author then goes on to the study of the changes and effects that take place in the nerve tissue from the action of the alkaloids, both separately and mixed together, agreeing with the observations of Arloing, that there is a change in the tissue that renders it insensible. He mentions that the action of cocaine on nerve tissues was utilised by Bier in the shape of intra-arachnoid injection in the lumbar region; also refers to Carini's experiments with large doses in the dog, who detected tissue changes twenty days after.

Dr. Courtois Suffiet treated a case of severe sciatica by an injection of 0·005 grains cocaine under the arachnoid. The patient was able to walk two minutes afterwards, and only felt a slight uneasiness over the dorsum of the foot.

In a case of painful priapism from syphilitic myelitis M. Arbant found with the same treatment that the erection is subjected at once, and remained quiescent for three weeks.

Intramural injection of cocaine—that is to say, between the dura mater

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and bone of the spinal canal—has been had recourse to in man, Brocard reporting that in fifteen cases of tabes and sciatica the pain completely disappeared for periods varying from a few hours to several days.

M. Bergougnan also saw a case of tabes, in which there was painful dysuria of three years' standing, treated with two injections of 0·02 grs. and 0·03 grs. of cocaine at three days' interval. The pain ceased ten minutes after the first injection, to reappear for a short time the next day, but completely pass away with the second.

M. Pecus at the same time has studied the action of morphine over the course of the nerves, and finds that it causes a diminution of sensibility with local anæsthesia in the zone over which its branches are distributed, and that this lasts for an indefinite period, in support of which theory he quotes four cases. He has found the myeline disorganised and standing in isolated drops in the nerve tube, giving it the appearance of an atrophied portion after resection.

Dr. Scharff has found that cocaine and morphine in the human being have the same action as M. Pecus found in animals; and Dr. Jaboulay, who has treated epilepsy by intrameningeal injection, has realised the difference between cocaine and cocaine and morphine, both in rapidity of action and time that anæsthesia lasts, viz., that with cocaine and morphine the effects are not noticeable till twelve hours after the injection instead of five minutes, as with cocaine, and last for eight days instead of forty-five minutes.

M. Pecus considers that the injection gives rise to anatomical changes in the nerve, by reason of which pain is not felt, and that in the course of these changes neuritis takes place. He thinks that this is proved from the slowness with which permanent results take place, and the fact that on the next day the lameness as a rule is worse.

He gives Nelaton and Schwartz's statistics. The former, out of 150 cases, had moderate results 45, good 20, very good 80, failures 5; and Schwartz, out of 29 cases, 5 failures.

(*Recueil de Médecine Vétérinaire*, 30th March 1904.)

HYSTERECTOMY IN THE BITCH.

BY M. POST.

THE author commences by stating that hysterectomy should not be practised unless there is danger threatened by leaving the uterus in the abdominal cavity. When it is in such a condition as to be likely to cause infectious peritonitis, recourse should be had to hysterectomy, which is performed as follows:—

1. After laparotomy on the linia alba a double ligature is put on each of the utero-ovarian ligaments, which are divided between them. A strong silk ligature is then passed round the body of the uterus immediately in front of the neck, and it is brought up to the posterior angle of the abdominal wound. The whole uterus being removed, the stump remains fixed to the wall of the abdomen.

2. A double ligature is placed round the neck of the uterus, which is divided between them with a Paquelin's thermocautery. The stump is left in the abdomen, and the eschar seals it up, preventing infection.

3. The third method is rarely applicable in canine practice. The first stages of the operation are performed as described above, but the stump of the uterus is, after return to the abdomen, invaginated by means of a forceps through the vagina, by which the stump is drawn into it like the finger of a glove turned inside out. A fresh ligature is applied close to the vulva, so that both serous coats are brought into apposition and allowed to unite, which takes place in about ten days, the wound being entirely closed. As a rule this plan is only applicable in the goat and ewe.

M. Post draws attention to the danger of cerebral anæmia caused by the removal of the uterine mass, which gives rise to *ex vacuo* congestion of the abdominal cavity, with cerebral anæmia as a result.

To avoid this he advises that the abdominal wound should be large, and he lays particular stress on the importance of rapidity, which should not take longer than twenty minutes.

M. Post describes the changes that take place in the stump when returned to the abdomen, and relates the history of an animal that had fractured the pelvis, and on which, as she was in pup, hysterectomy was performed.

The operation passed off successfully, and the animal appeared in good health, when, to the astonishment of the author, on the fifty-second day afterwards the patient was found in a comatose condition, and died the next day. A post-mortem showed the lesions of acute peritonitis. The operation wound had completely healed up, and only a small cicatrix remained. The stump of the uterus was joined to a loop of the small intestine by a fibrous band, but it was completely closed. A sound passed up the vagina failed to penetrate to the abdomen. The ligature was found in the vagina, and the author thought it was about to be passed out through the vulva; there was no trace of suppuration in the stump. M. Post has made a microscopic examination of sections of the stump coloured with eosin and Van Gieson's methods, also on others stained for bacteria with Gram's stain and methyl blue.

The examination showed that the lumen of the neck of the uterus gradually diminished as it approached the free portion of the stump, and that in patches the epithelium had disappeared. Round the lumen of the neck were a large number of small cells, which in parts even obliterated the whole of the passage. Between these small round cells were scattered large ones containing a number of brownish yellow pigment granules, probably exterminated when the ligature was applied.

These large cells he considers to be phagocytes, and below this infiltration was the layer of circular muscular fibre, the different bundles of which were separated from each other by a considerable quantity of connective tissue which was present as well in the layer of longitudinal fibres. The vascular layer which was present between the two muscular fibres contained a large number of newly formed small vessels.

The sections stained with methyl blue and Gram's method did not reveal any bacteria in the muscular layer, but there were a large number of diplococci and bacilli in the periphery, which accounted for the peritonitis.

(*Tijdschrift voor Vesartsenij Kunde*, p. 495.)

XUM

To our Readers.

We beg to announce that with the January number a series of Original Articles is commenced, from the pen of Lieut.-Colonel Nunn, on "Veterinary Toxicology." It is expected to publish these articles in book form at the conclusion of the series.

Part II.—SPECIAL TOXICOLOGY.

BY LIEUT.-COLONEL J. A. NUNN, F.R.C.V.S., F.R.S.E., C.I.E., D.S.O., BARRISTER-AT-LAW, DEPUTY DIRECTOR-GENERAL ARMY VETERINARY DEPARTMENT.

(*Continued from page* 56, *Vol. X.*)

Treatment.—It is useless giving emetics, as copper is one itself. Treatment should be directed to turning what remains of the poison in the intestines into an insoluble compound, and eliminating what has been absorbed.

The readiest antidotes are:—Milk, white of eggs, soap and water. Dumas and Payen recommend iron filings; Bouchardat and Sandras, zinc; these metals precipitate copper as a metal from saline solutions. Magnesia (Boucher) and freshly prepared sulphate of iron (Navier) have been recommended; also ferrocyanide of potassium, a harmless compound, which precipitates copper in the form of insoluble ferrocyanide of copper.

Marcellin Duval recommends sugar, with the object of reducing the copper to an insoluble oxide; but the sugar has first to be turned into glucose, and even then exposed to a temperature much greater than the body. Grape juice has been suggested with the same object, also because it contains carbonate of potash.

Diuretics can be given, also bromide of sodium; the colicky pains are best combated by hypodermic injections of morphia.

Analysis.—If there is a large quantity of copper present, by acidulating a portion of the material with hydrochloric acid it can be detected by simply placing a piece of bright steel, such as the blade of a knife, in it, when the copper will form a red stain on the metal; if, however, there is only a minute portion, the organic matter must be previously destroyed. The process used is indifferent, as copper, being a heavy metal and stable, resists a considerable degree of heat. Fresenius and Babo's, Flandin and Danger's, are both applicable, also Ellenberger's and Hofmeister's, which will be described further on under the heading of lead. The fluid obtained is neutralised with ammonia, and submitted for an hour to the action of suphuretted hydrogen, taking care that it is kept at a temperature of about 70° Cent. It is then let stand for twenty-four hours in a corked flask, and if copper is present a black precipitate—sulphide of copper—will be thrown down. The precipitate is collected on a filter washed with a solution of sulphuretted hydrogen, placed in a small porcelain capsule, sprinkled with a

little warm concentrated nitric acid, and then submitted to the tests that will be mentioned later on.

Arnaud Gautier's Method.[1]—The material is finely divided and weighed, placed in a platinum capsule, dried, and moistened with sulphuric acid. This is carefully heated over a spirit lamp till turned to charcoal, and no more fumes are given off; it is then powdered in the capsule with a glass rod and treated with boiling water acidulated with nitric acid. The residue is dried, calcined at a low heat, and added to the fluids that have been used in washing, the whole placed in a platinum vessel, treated with sulphuric acid, and again calcined. The residue is treated with an excess of water brought to boiling-point, and left standing for the day. Lead and tin, if present, are thrown down in the form of insoluble sulphate and bioxyde, the copper remaining in solution as a sulphate.

The solution is acidulated and put into an open-mouthed platinum vessel, which is placed in a porcelain vessel containing mercury. The negative pole of a battery is placed in the mercury, and the positive, round which a platinum wire is placed into the suspected fluid, when the copper will be found deposited on the surface of the vessel. The current is allowed to pass for twenty-four hours, when the fluid is drawn off with a syphon or pipette and the capsule weighed; the deposit of copper is then carefully washed off it, the vessel being drained and again washed first with alcohol, afterwards with ether, let dry, and again weighed, the difference being the amount of copper present in the material made use of. In some cases the copper becomes oxydised by contact with the air, and then the quantity cannot be determined by simply weighing it.

The capsule must be heated to redness in the flame of a spirit lamp, placed under a bell glass, with a watch glass of sulphuric acid, and allowed to cool. It is then weighed, and the increase gives the amount of cupric oxide, which, multiplied by 0·79874, give the weight of copper. The residue of oxide, moistened with a small quantity of nitric acid, which is evaporated with caution, is then diluted with water, and the solution can be submitted to the following tests:—

A. Sulphuretted hydrogen and ammonium hydrosulphide give a black precipitate (disulphide of copper) insoluble in sulphates of potassium, sodium, or hydrochloric acid, but soluble in cyanide of potassium.

B. Potash and soda give a profuse blue precipitate that turns brown. If heated, this takes place much more rapidly.

C. Carbonate of soda gives a greenish-blue precipitate, changing to black.

D. Ammonia gives a greenish-blue precipitate, soluble in excess of the reagent, and forming a sky-blue solution. This test will give a reaction in a 1 in 200,000 solution.

E. Ferrocyanide of potassium gives a reddish-brown precipitate,

[1] Gautier. Ja cuivre et le plomb dans l'alimentation et l'industrie au point du vue de l hygiene. 1883.

or a red solution if the quantity of copper is small. It will give a reaction in a 1 to 200,000 solution.

F. A slip of steel or zinc will be covered with a film of metallic copper.

G. A warm solution of glucose gives a red precipitate.

H. Iodide of potassium gives a white precipitate—iodide of copper.

I. Sulphocyanide of potassium gives a white precipitate.

J. Tincture of guaiacum and hydrocyanic acid turn the solution blue.

K. Borax and phosphorus melt the oxide of copper in the outer portion of the blowpipe flame. The bead is green when warm, but turns blue on cooling. In the inner portion of the flame the borax bead is uncoloured, the phosphorus turns a dark green; both when solidified turn a brownish-red.

Hadon has proposed to use ferrocyanide of potassium for the detection of copper in bread. He places a slice of pure bread and the suspected one together, sprinkling them with a solution of the ferrocyanide. After a short time, if there is copper present, the bread will turn a pink or red colour. The author states that this test is only useful for proportions of 2 per cent. or over.

ZINC, 427.

Although zinc and its compounds have not the toxic properties of other metals, such as lead, copper, &c., they are capable of exerting a deleterious influence, and indeed of causing death.

Zinc, which is sometimes known as Indian tin, is a whitish-blue crystalline metal, fusible at 400° Cent. By exposure to moisture it becomes coated with an insoluble film of hydrocarbonate of zinc, so that in the form of pipes and gutters water has very little action on it, but acids have, such as butter-milk kept in zinc pans, and house wash for pigs in zinc buckets.

Commercial zinc is seldom pure; it nearly always contains a proportion of arsenic, and this fact must be remembered in considering its toxic properties. This is especially the case when animals are exposed to fumes from zinc works, a certain amount of arsenic being given off.

Oxide of zinc is frequently used as an ointment, and it is not usual to take any particular precautions to prevent the animal licking the part; but Boucher[1] records a case of poisoning in a dog from this cause. The oxide is not, however, easily acted upon by acids, and thus resists absorption when in contact with the contents of the stomach.

Chloride of zinc acts chiefly as a caustic, and more partakes of

[1] *Journal de Médecine Vétérinaire et de Zootechnie*, 1893.

the nature of corrosive acids. An impure solution is sold under the name of Sir William Burnett's disinfecting fluid. It is either colourless or yellow, from the presence of oxide of iron. It has in the human being been the cause of accidents through being mistaken for fluid magnesia or water in the first place, and in the second for beer.

Sulphate of zinc, or white vitriol, greatly resembles Glauber's salts, and several accidents through mistake are reported; but being a powerful emetic those animals that are capable of vomiting are able to relieve themselves.

Physiology.—It is probable that the salts of zinc combine with the albuminoids to form an albuminate which is partly soluble, especially if there is excess of zinc. Absorption is generally quick, although elimination is slow; according to Michaelis it is not present in the urine for the first five days after administration. The reason of this, no doubt, is that zinc is not precipitated by sulphuretted hydrogen with hydrochloric acid, which is present in the stomach. Zinc is chiefly deposited in the liver and spleen, and is eliminated in the milk.

Toxic Doses.—Three ounces of the sulphate intravenously has proved fatal in the horse, and 10 to 50 grains in the dog. 3 to 5 drams caused nausea, colic, and attempts to vomit in the horse.—Tabourin. In small doses, that is to say from 4 to 5 grammes in a litre of water, it only acted as a strong astringent, drying up and discolouring the mouth, and causing thirst and constipation, the fæces being very hard.

With 10 to 20 gramme doses swallowing was difficult, the mouth becoming dry and patulous; loss of appetite, increased thirst; marked constipation and straining, the fæces being hard and coated with mucus. There is often colic, and the abdomen may be tucked up, or, on the contrary, tympanitic. There is nausea, violent attempts at vomiting, hiccough, salivation, and general depression, with in many instances eructation, the food being expelled through the nostrils. In large doses of 30 to 40 grammes the same symptoms take place, only they are more acute and rapid. Orfila found that $7\frac{1}{2}$ drams caused dogs to vomit without any lasting effects, but that when it was prevented by ligaturing the œsophagus, a much smaller quantity was fatal in three days from gastro-enteritis; and 30 grains intravenously caused almost instantaneous death.

Symptoms, Acute.—Salivation, nausea, vomiting, colic, and diarrhœa, followed by great weakness, cramps, and rigors. The beats of the heart are slow and feeble, the temperature falls, paraplegia sets in, and death soon follows.

In Boucher's case already mentioned, the head was considerably swollen, and at the depending parts of the body there were œdematous, the enlargements varying from the size of a pea to a hazel nut. They were present at the base of the neck, along the back, at the

root of the tail and extremities of the limbs. The eye was glassy, fixed, and the conjunctiva pale in colour.

The mouth was dry and livid, and the breath hot but without any smell. The abdomen painful, and the movements of the intestines continuous and violent. The respirations were jerky, quick, and painful, with increase of the respiratory murmur; the pulse weak, quick, irregular, and at times imperceptible, the temperature low, 35·8 Cent.

Treatment.—The best antidotes are calcined magnesia, any of the alkaline carbonates, and albumen. This must be given in large quantities, for the insoluble albuminate formed is redissolved in the presence of free zinc. It is not usually necessary to administer an emetic, but if one is required ipecacuanha is preferable. Elimination can be assisted by oleaginous purgatives and enemas, with diuretics, especially acetate of ammonia, and the system supported by stimulants and tonics.

Post-Mortem.—The post-mortem lesions are due to the local action of the drug. The mucous membrane of the mouth, œsophagus, stomach, and sometimes the duodenum, is white, opaque, and of a hard leathery consistency, the membrane being corrugated and frequently ulcerated or sloughing. There is also enteritis, especially marked in the large colon, with the formation of false membranes. In chronic cases there is extreme emaciation and cachexia, and there may be stricture of the bowel.

Analysis.—The organic matter has to be destroyed, and Fresenius' and Babo's method is the best, giving chloride of zinc dissolved in the fluid with hydrochloric acid, but care must be taken not to use too great a degree of heat, as the chloride of zinc formed is volatile. To this is added an excess of acetate of soda, with the object of replacing the hydrochloric by acetic acid, which does not hinder the formation of sulphide. The fluid is treated with sulphuretted hydrogen, and the precipitate formed by the sulphuric acid evaporated till white fumes are given off. The residue of sulphate of zinc is dissolved in water, again filtered, and submitted to the following tests:—

1. Sulphuretted hydrogen gives a white precipitate, soluble in the mineral acids, but insoluble in acetic, ammonia, hydrosulphide, or cyanide of potassium.

2. Ammonia hydrosulphide gives a white precipitate, sulphate of zinc.

3. Carbonate of soda gives a white precipitate, carbonate of zinc.

4. Ammonia gives the same reaction. The precipitate is gelatinous, and soluble in excess of the reagent, but this test is not often employed. Potash gives the same; the precipitate is soluble in excess of the reagent and sulphuric acid.

5. Ferrocyanide of potassium in small quantities gives a white precipitate, insoluble in hydrochloric acid. According to Mylius, this test will give a reaction with $\frac{1}{10}$ milligramme per litre.

6. Ferriccyanide of potassium gives a brownish yellow precipitate.

7. On charcoal under the reducing flame of the blow-pipe, a small quantity of the residue after the fluid has been evaporated, and a drop of nitrate of cobalt and chloride of ammonia applied will give a green bend—Penmann's green.

LEAD.

Criminal poisoning by lead is unknown in veterinary practice, but accidental is not at all uncommon.

Pure metallic lead is harmless, but it is easily acted upon by a number of reagents, and poisonous compounds formed. It is chiefly found in the forms of sulphides and carbonates, and if exposed to damp air is covered over with a coating of oxide. Aërated water dissolves a considerable portion, also alkaline waters, and those containing certain organic matters, more especially if they are aërated. Most acids will attack lead, but lime dissolved in water will prevent it. Broadly speaking, potable waters dissolve lead quicker than an impure ones. Gautier[1] found one decimilligramme per litre in water from the Seine, and five times that amount in the Vanne, a much purer stream. Water containing carbonate or sulphate of lime acts slowly on lead, but the reverse takes place with nitrate of ammonia.

The solvent action of aërated water should be remembered when the water supply is filtered through broken brick or sand, as is now done with many town supplies.

Lead is not only used for cisterns, water-pipes, &c., but many compounds are in everyday use in arts and manufactures, viz., monoxide (lietharge or Manicot), dioxide (pure coloured oxide), red oxide (red lead or minium), carbonate (cerusite), acetate (sugar of lead, saturne), chromates (red and yellow chrome). White lead is much used as a paint, and in a compound of carbonate and hydroxide of lead.

The sulphide or "galena" is used in the glaze on pottery, and in the human being has been the cause of many accidents. Carbonate of lead is used in the manufacture of linoleum and oilcloths, and M. Stourb has calculated that a piece 1½ metres square will contain 700 grammes.

Predisposing Causes.—Cases of lead poisoning are more frequently observed in the dog than the other domesticated animals, no doubt on account of his living more in intimate relationship with man. Cattle and poultry appear to be the most susceptible, but the strange perversion of appetite in pica renders all the domesticated animals liable. Animals feeding near lead smelting works suffer from chronic poisoning.—(*Chemist*, 1855; Finlay Dun's *Veterinary Medicine*, 418.)

[1] Le cuivre et le plomb. Paris, 1883.

Reviews.

LAHRBUCH DER ALLEGEMEINE PATHOLOGIE FUR TIERÄRTZTE UND STUDIERENDE. (HANDBOOK OF PATHOLOGY FOR VETERINARY SURGEONS AND STUDENTS.) By Professor Dr. Kitt, Munich Veterinary School. One Vol., 433 pages, 119 illustrations, 4 coloured plates. Published by Ferdinand Enke, Stuttgardt. Price 12s. 6d.

DR. KITT gives the essential elements of pathology that are necessary as a formulation for the study of veterinary medicine.

He first gives a review of general nosology without infringing on that branch of etiology that deals with micro-organisms and parasites, for the study of which he refers the reader to his manual of bacteriology and microscopic pathology, as well as his large treatise on pathological anatomy, second edition, 1901.

The author confines himself to a description of the primary morbid processes and their development, which he classifies into three groups,—1, of the circulation; 2, nutrition; 3, reparation and neoplasms, finishing by a few remarks on the principal functional diseases that are special to the different systems.

The book is a review of the pathology of the domestic animals brought up to date, treated in a concise manner. The illustrations are well drawn, and greatly add to its value.

MANUALE DI MEDICINA OPERATORIA. (MANUAL OF OPERATIVE MEDICINE.) By M. Giov Gambarotta, Turin Veterinary School. One Vol., 408 pages, 81 illustrations. Francesco Vallardi, Milan.

SENOR GAMBAROTTA'S manual is divided into four parts. First, general operative technique; second and third, operations performed in an identical manner on the body, puncture, incision, reunion, dressings, injections, &c. &c.; fourth, operations on a special region performed in a special manner, as on the sinuses, teeth, larynx, trachea, œsophagus, thorax, and genito-urinary system. The work is a volume of the "Italian Veterinary Encyclopædia," and is well got up.

GRUNDSAETZE BETRIFFEND EINHEITLIENE GESETZLICHE REGELUNG DES VERKEHRS MIT MILCH. (UNIFORMITY IN THE REGULATION OF THE SALE OF MILK.) By Edgard Reich, Chemist. Georges Siemens, Berlin. 1904.

AT the request of the Federated Association of Milk Dealers, the author, in conjunction with several other societies interested in the milk trade in Germany, has produced a small pamphlet of thirty-six pages, divided into nine chapters.

1. General remarks; 2. Treatment of milk on the farm; 3. Transport to towns; 4. Hawking milk in the streets and House to house delivery; 5. Milk shops; 6. Composition of milk; 7. As a food for children; 8. Control and regulation as to sale; 9. Penalties.

The little pamphlet should be of interest to all concerned in the milk trade.

BACTERIOLOGISCHE DIAGNOSTIK FUR TIERAERTZE UND STUDIERENDE (Bacteriological Diagnosis for the use of Veterinary Surgeons and Students). By J. BOUGERT, Superintendent of the Bacteriological Laboratory of the Berlin Abattoir; 235 pages, 9 plates, and 102 micro-photographs in a separate Appendix. 1904: Published by Otto Nemnich, Wiesbaden.

The book is an excellent one, and does credit to the publisher. The plan of publishing the micro-photographs as a separate Appendix facilitates reference. In the first chapter the author describes material, passes on to a description of the microscope and its technique, the morphology and biology of micro-organisms. In the second part he treats of pyogenic organisms—those of charbon, malignant œdema, &c.—in fact, of all the known microbean diseases of animals, finishing by intoxication from ptomaines, and trypanosomis and piroplasmosis. Under the heading of each organism he reviews the susceptibility of various animals, the morphology of the organism, methods of cultivation, staining, clinical diagnosis, anatomical and pathological characteristics, microscopical diagnosis, and in certain cases the methods of vaccination. The micro-photographs are the author's own work, and are almost all taken to one scale, 800 diameters so as to permit of easy comparison. The book is highly commended on account of its clearness and conciseness, and should be found in the libraries of all practitioners.

HANDBOOK OF MEAT AND ABATTOIR INSPECTION. By Professor V. GAUTIER, Lyons; 2nd edition, 1 vol., 232 pages. Asselin et Houyeau, Paris, 1904, 3 francs.

The manual, as stated in the preface, is an abridgment of the course of lectures and demonstrations given by the author at the Lyons Veterinary School.

After an introduction treating on the general principles of meat inspection, the subject is at once entered into. 1. Markets and the inspection of live stock. 2. Slaughter-houses, modes of slaughter, death from accidents and disease. 3. Meat brought from the country, foreign and preserved meat, marking, seizure, identity of impounded animals, responsibility of inspectors. 4. Origin of meat, characteristics of different sorts of healthy meat, quality of meat. 5. Young, thin, cachectic, watery, bad smelling, and discoloured meat, meat altered from certain lesions, meat from animals suffering from disease of the viscera, phosphorescence, meat altered by flies or fungi. 6. Diseased, altered, putrid, insufficiently bled and feverish meat, over-driven meat, and from poisoned animals. 7. Meat from animals suffering from virulent disease. 8. From animals suffering from parasites. 9. The inspection of sausages, fowl, game, and fish.

The author, while strictly adhering to the practical portion of the subject, has not overlooked any essential points, indeed he has entered at considerable length into some that at the moment are of interest, such as foreign meat, also the whole legal aspect of this branch of public health.

In a subject about which so much has been written, there is not much that is new, but the author is wise in giving complete details of the latest and what have been proved to be the best methods of investigation, and to have avoided the usual padding in such works of anatomy, zoology, pathology, bacteriology, on which special treatises have been written.

Obituary.

We regret to learn of the death of Professor James Beart Simonds, an Ex-President of the Royal College of Veterinary Surgeons, and for a number of years the Principal of the Royal Veterinary College, Camden Town, London.

We much regret to hear of the death of Mr. Shipley, Senior, M.R.C.V.S., a very well known and highly esteemed practitioner at Yarmouth, and father of our energetic Member of Council, to whom we tender our deepest sympathy in his great bereavement.

Communications, Books, Journals, &c., Received.

Agricultural Journal (Cape of Good Hope); Berliner Thierärztliche Wochenschrift; La Clinica Veterinaria (Milan); Deutsche Thierärztliche Wochenschrift; Tannoform in Veterinary Medicine (March); The Sanitary Journal; Scottish Medical and Surgical Journal; Veterinary Record; La Riforma Veterinaria; Le Mois Scientifique (Paris); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Johns Hopkins Hospital Reports; Journal of Comparative Medicine and Veterinary Archives; Recueil de Médecine Vétérinaire; Gazette Médicale de Paris; Modern Medicine; Johns Hopkins Hospital Bulletin; Il Veterinario di Campagna (Moncalleri); Le Bulletin Vétérinaire (Orleans); Revista de Medicina Veterinaria (Bucarist); La Revista Veterinaria (Buenos Aires); Zeitschrift für Fleisch und Milchhygiene (Berlin); Buletinul Societatii de Sciinte diu Bucuresci-Romania; The Meat Trades Journal; The Dental Record.

XUM

Royal College of Veterinary Surgeons.

A QUARTERLY Meeting of the Council was held at 10, Red Lion Square, London, W.C., on Friday afternoon, July 1st, 1904, Professor W. O. Williams (President) in the chair.

The following members were present:—Professors Williams, M'I. M'Call, M'Fadyean, Mettam, Penberthy and Shave; Messrs. Abson, Dollar, Fraser, Lawson, Locke, Mason, M'Kinna, Mulvey, Over, Villar, Hunter, Banham, Simpson, Trigger, Cope, Thomson, Carter, Wragg and Garnet, Mr. Thatcher (Solicitor), and Mr. Hill (Secretary).

The President read a list of the absentees, viz., Messrs. Bower, Dewar, Allen, Duck, Shipley, and Wartnaby.

The President stated the first business would be to elect a new president.

Mr. WRAGG: "I have great pleasure in proposing Mr. Bower as President of this College. Unfortunately Mr. Bower cannot be present to-day, as he is attending the funeral of the late Mr. Shipley, the father of our brother of the Council. I feel sure that if Mr. Bower is elected to the presidential chair he will carry out the duties with honour to himself and advantage to the College. I am also confident that it will be a great source of gratification to his Most Gracious Majesty the King of the sterling worth of his abilities. I beg to propose his election to the Council.

Mr. MASON.—I have great pleasure in seconding the proposition to elect Mr. Bower as President to the Council.

Whilst on my legs I should have said that he said to me personally that if his name was given he would accept the office, and be a better attendant than he had been of late years.

Professor M'FADYEAN.—Might I ask the mover of this election if he knows whether Mr. Bower will accept the honour? I feel it to be my duty, although I have not a word to say in opposition to the statement in regard to the Presidential Chair which has just been made, but I feel it to be my duty to submit another name to the Council, namely, Mr. Dollar. I think that Mr. Dollar is well entitled to that honour, not only from the position he occupies in this place as a whole, but also the length of his services on this Board; and I beg to say that if Mr. Dollar is elected President he would devote himself in the most absolutely single-minded manner, in what he thinks to be the general welfare of the Council. It is in a sense unfortunate that on this important subject we cannot be unanimous; but I would like to point out to the Council that Mr. Wragg in proposing, and Mr. Mason in seconding, the proposition that we elect Mr. Bower as President is inviting the Council to pass, I will not say an insult, but an absolute slur on Mr. Dollar. No one can deny that during recent years it has been the custom (and I do not think it is a good one) to elect a President according to his length of service, and an occasion may arise when to depart from that, but I humbly submit

that no one will say Mr. Bower is better able to fill the chair, and he has not been so long a Member of this Council. I beg to propose we elect Mr. Dollar as President of this Council.

Professor METTAM.—I have great pleasure in seconding this proposition.

The PRESIDENT.—As there is no other name before us we will now vote.

The number of votes in favour of Mr. Dollar are 15 and Mr. Bower 6, therefore, I have great pleasure in announcing that Mr. Dollar is elected President. (To Mr. Dollar.) I have the honour to vacate this post and ask you now to take the Chair. (Applause.)

The PRESIDENT.—Professor Williams and Gentlemen: On an occasion like this, the first, and one of the most pleasurable duties of the person on whom your choice has fallen, is that of replying and thanking you for the position in which you have placed him. It is usual under these circumstances to speak of the honour which has devolved on the happy recipient, and I feel that honour in its full force; but I cannot help feeling, at the same time, that that honour has in a large measure yet to be earned; that the high duties which one is called upon to perform make necessarily very great demands, not only on the abilities, but on the temperament of the person who occupies this chair. I, therefore, in all humility beg of you to accord to me the support which you have in such full measure bestowed on my predecessor, and I trust that in my hands the prestige of the College may undergo no diminution, and that I may, equally with my predecessor, enjoy the opportunity of serving the College, and that I may prove even as successful as he has been in the office. Gentlemen, again I thank you. (Applause.)

Mr. WRAGG.—Mr. President and Gentlemen: I beg to move a very hearty vote of thanks to Professor Williams for the very able manner in which he has occupied this Chair; I think it needs few words of mine, as we all have seen the splendid manner in which he has occupied the chair, and I move a very hearty vote of thanks.

Mr. SIMPSON.—I beg to second the vote of thanks made by Mr. Wragg and to say that I feel sure that every member of the Council, including myself, has appreciated throughout the whole of the two years' Presidency that Professor Williams has devoted himself with great energy and great success to his duties.

The PRESIDENT.—A vote of thanks has been proposed by Mr. Wragg and seconded by Mr. Simpson; I now call upon the Council to show their entire satisfaction and unanimity of Professor Williams' presidency. (Loud applause.)

Professor WILLIAMS (who was received with cheers).—Gentlemen: I beg to thank you most sincerely for your vote of thanks offered me for my humble efforts in the Chair, and am glad to say that I have presided at other places and have never had, I think, a more docile Council. (Laughter).

The PRESIDENT.—The next business is the election of six Vice-Presidents for the ensuing year.

It is desired that the names of the former Vice-Presidents shall be given. Mr. Thatcher will read the names:—

Messrs. Dewar, Allen, Banham, Simpson, Carter and Bower.

The following gentlemen were proposed:—

Professor Williams, proposed by Mr. Wragg; Mr. M'Kinna, proposed by Mr. Lawson; Professor Mettam, proposed by Professor Shave; Mr. Villar, proposed by Professor M'Fadyean; Mr. Bower, proposed by Professor M'Fadyean; Mr. Shipley, proposed by Mr. Over; Mr. Locke, proposed by Professor Williams.

The PRESIDENT.—Will you please vote, gentlemen. It has been my experience on former occasions that seniority is not to be considered in the case of Vice-Presidents. If you would wish me to take opinion of the Council—

Mr. WRAGG.—Oh, no.

The PRESIDENT.—It is agreeable to the Council that simple nominations shall suffice.

I will now read the voting papers:—

Mr. Bower, 18; Mr. M'Kinna, 17; Professor Williams, 16; Mr. Locke, 14; Mr. Villar, 13; Professor Mettam, 13; Mr. Shipley, 12; Mr. Wragg, 10; Professor Shave, 7; Mr. Over, 5.

There being an absolute majority for the first six gentlemen, I declare them to be elected Vice-Presidents.

The PRESIDENT.—The next business is to elect a Treasurer.

Mr. MULVEY.—It is almost unnecessary to put this motion, as our worthy friend, Mr. Wragg, has held the office so long and takes such interest in the finance, cares so much for it and performs his duty so admirably, that I beg to propose his re-election.

The PRESIDENT.—If there is no other nomination I declare Mr. Wragg to be re-elected to his old position. (Applause.)

Mr. WRAGG.—It is difficult for me to find words to express my pleasure at the confidence the Council has placed in me. Mr. Mulvey has said a few words which, perhaps, before this Meeting has ended he may be sorry for; however, gentlemen, I thank you for the confidence you have placed in me.

The PRESIDENT.—The next business is to elect a Secretary and Registrar.

Professor WILLIAMS.—I have great pleasure in proposing the re-election of Mr. Hill as Secretary and Registrar; at the same time I propose a vote of thanks to Mr. Hill for the services he has rendered to the Council for the past 25 years.

Mr. SIMPSON.—I second the vote.

The PRESIDENT.—Is there any other nomination? I think there is none. I declare Mr. Hill duly elected as our Secretary and Registrar for the ensuing year.

Mr. HILL.—Professor Williams and Gentlemen: I thank you most sincerely for the honour of my re-election.

The PRESIDENT.—That, gentlemen, concludes the business of the meeting of Council.

QUARTERLY MEETING OF COUNCIL.

Immediately following the meeting of Council a quarterly meeting of Council. The President, Mr. J. A. W. Dollar, occupied the chair, and the following members were present:—General Thomson,

Professors James McI. McCall, M'Fadyean, Mettam, Penberthy, Shave, Williams, Messrs. Abson, Banham, Carter, Fraser, Garnett, Hunter, Lawson, Locke, Mason, McKinna, Mulvey, Over, Simpson, Trigger, Villar, Wragg, Thatcher (solicitor), and A. W. Hill (secretary).

The PRESIDENT.—The Quarterly Meeting will now commence and if a proposition is made that the Minutes having been printed and circulated be taken as read, they will be open for discussion and adoption.

Mr. MULVEY.—I move that the Minutes be adopted.

Professor WILLIAMS.—I second that.

The PRESIDENT.—Gentlemen, it has been proposed by Mr. Mulvey, and seconded by Professor Williams, that the Minutes be taken as read, and those who are in favour of the proposition will kindly notify the same in the usual way.

Professor METTAM.—There is one point that I should like to add, and that is, to ask whether the Minutes are ever read through and approved before they are sent to the Council? I think if ever anyone reads them they will find mis-spellings, and such things as could be altered.

Mr. VILLAR.—There is a point that I would call your attention to, and if it should be in any way agreeable, I am going to offer a suggestion; seeing that our Minutes are formally taken as read they may be simplified. I take it that the Minute Book is not only a record of the business transacted, but of the suggestions and remarks made. Now I notice that in the Minutes, the remarks which the gentlemen have made are entirely suppressed; their names are suppressed, and it occurs to me that a member of the Council must be disappointed if he thinks he has made a good point or two, and it is not noticed. I make this remark to the gentlemen who are responsible for the drawing up of the Minutes.

The PRESIDENT.—I presume that neither Mr. Mulvey nor Mr. Villar propose any form of amendment, but their remarks are simply as guidance for the chair.

Mr. WRAGG.—Might I ask a question as to whether the proof is corrected or not?

Professor PENBERTHY.—I would suggest that instruction be given to the Secretary that he correct the printer's proofs.

The PRESIDENT.—Strictly speaking, Minutes of Meetings comprise the formal acts of the officials, the motions which are brought before them, the proposing and seconding them, the conclusions which are reached. It has always been thought desirable that our Minutes should be somewhat fuller, and I hope that in the future no questions may arise as to any apparent suppression, and I will endeavour to arrange that, so far as possible, the fullest report shall be given consistent with a due regard to economy.

There is, at the present time, a motion by Mr. Mulvey before the meeting, that the Minutes be confirmed, seconded by Mr. Mason. All those that are in favour of the proposition kindly raise their hands. Carried unanimously.

A point has just arisen which perhaps demands some explan-

ation; together with the Minutes of the quarterly meeting of the Council there were issued to you the Minutes of two special meetings, now, as I read the Bye-Laws of the College, the Minutes of the special meetings can only be confirmed at a special meeting, and as there is no special meeting on the Agenda on this occasion, the confirmation of these Minutes, according to my own personal and private view, must be deferred until a special meeting is called, perhaps in the course of two or three months.

A letter was read from the Editor of the *Veterinary Record* as follows:—

"In the event of the balance of the Walley Memorial Prize investment not reaching the sum of £10 I shall be glad to make up the amount."

Mr. WRAGG.—May I say that though we very much appreciate the kind offer of Mr. Hunting, for the present year we have sufficient funds in hand.

The PRESIDENT.—Gentlemen, I presume there is no amendment to that proposition?

It has been proposed by Mr. Locke and seconded by Mr. Wragg, that a letter of thanks be addressed to the Editor of the *Veterinary Record*, and that whilst we inform him that for the present year we have sufficient funds to carry out the proposition of the Walley Memorial Examination, the Council very deeply appreciate his kindness in making his proposition and beg to thank him.

A letter was read from S. M. Murray, Esq., Secretary of the Educational Institute of Scotland, as follows:—

"40, *Princes Street, Edinburgh, May* 4, 1904.

"DEAR SIR,—I am in receipt of yours of yesterday's date, asking if we 'should be willing to continue the examinations in General Education for Veterinary Students in London, Dublin, and Edinburgh as at present, but to exact from candidates the percentage of marks required to satisfy the requirements of the General Medical Council.'

"I shall at once lay your communication before my Board of Examiners, and you shall hear from me in due course.—I am, faithfully yours,

"S. M. MURRAY."

A letter was also read from the Midland Counties Veterinary Medical Association enclosing the following resolution:—

"That this meeting of the Midland Veterinary Medical Association heartily endorse the action of the Council of the Royal College of Veterinary Surgeons in protesting against the proposed affiliation of a Veterinary College with the University of Liverpool."

With the following letter from the Secretary:—

"I am directed by the above Association to ask you to place the enclosed resolution (which was unanimously passed at the quarterly meeting held at Cheltenham on May 11 last) before your Council at their next Meeting."

XUM

A letter was also put in from the Architects, Messrs. Bourchier, Burmester & Galsworthy, to the following effect:—

"We have heard from the Architect acting for the adjoining owner, that, for the present his client is not pressing to proceed with the suggested alterations."

A letter from Under Secretary of State for the Home Department to the Secretary of the R.C.V.S. was also read, as follows:—

"In reply to your letter stating that a Committee of the Royal College of Veterinary Surgeons would be pleased to wait upon the Secretary of State at any appointed time on the subject of the proposed removal of the New Veterinary College from Edinburgh to Liverpool, I am directed by the Secretary to state that if you and the chairman of the Committee could make it convenient to come to the Home Office he would see you, but there appears to be no need, at all events at present, for a deputation to attend."

Further correspondence having been read

The PRESIDENT.—Gentlemen, if there are no remarks to be made on the correspondence, I will call on the Secretary to read the list of the presentations to the library.

The SECRETARY announced that the following presentations had been made to the Library since the last meeting: *The Veterinary Journal*, three months, from the Editors; *The Journal of Comparative Pathology and Therapeutics*, from the Editor; *The Veterinary Record*, from the Editor; *The Rhodesian Agricultural Journal*, Vol. I., No. 5; Proceedings under the Diseases of Animals Acts, Board of Agriculture; Proceedings under the Department of Agriculture, Ireland.

On the motion of Mr. Abson, seconded by Mr. Mulvey, a hearty vote of thanks was accorded to the respective donors.

OBITUARY LIST.

The SECRETARY read the obituary list.

Mr. WRAGG.—It has come to mind that the death has occurred within the last few days of Mr. Shipley, senr., of Yarmouth, the father of our brother Councillor. Mr. Shipley was very well known to me and these around the table. He was one of Nature's gentlemen; he was a very skilled practitioner, whose opinion was always sought and worth having, and, if found in order, I should like to move a vote of condolence to our brother Councillor for the loss he has sustained.

Professor PENBERTHY.—I beg to second it.

The PRESIDENT.—It has been proposed and seconded that a vote of condolence be sent to Mr. Shipley in the great loss he has sustained.

The motion was carried in silence, all the members of Council upstanding.

Mr. LAWSON then read the Report of the Finance Committee:—

Vouchers and receipts for preceding quarter were duly passed, and cheques were ordered to be drawn for the expenses. The delegates' expenses were also ordered to be paid.

The committee recommended that in future the examinations in

Scotland be held alternating years in Edinburgh and in Glasgow. The committee called attention to the excessive expenditure incurred at the recent examinations in Scotland, that it be left in the hands of the treasurer to invest monies standing to the balance of the Steel Memorial and the Bursary and Jubilee Memorial Committees.

Gentlemen, it has been proposed by Mr. Lawson and seconded by Mr. Locke that the report be received.—Carried.

The report is now open for discussion.

Professor WILLIAMS.—With regard to the paragraph in the report dealing with the future examinations in Scotland, if that is going before the meeting, I might suggest that no examination be held at any place where there is going to be a loss to the Council. I would further point out that it is quite *ultra vires* for the Committee to make the recommendation. This Council is bound to send its Board of Examiners to any veterinary school that is affiliated to the Royal College of Veterinary Surgeons. (Cries of "No, no.")

Professor M'FADYEAN.—Will you read the provision of the Charter which bears on that?

I must say that there is no obligation resting on this Council to hold an examination at every school that happens to be affiliated to this body. I understand there are grave financial obligations under which an examination board has to be sent to each centre in which there is an affiliation, and in which there may be only half a dozen students to be examined. We should be required to send the whole examining board if there were only one student to be examined, especially in view of the short distance between Edinburgh and Glasgow. I do not think there ought to be any objection to the suggestion of the Committee; but my own objection to it is that it will on many occasions compel the larger number of eligible students to go to the place where the smaller number is. I beg to move that that recommendation be not adopted, that in Scotland we hold the examination in Edinburgh or Glasgow, according to which has the most students to present. It would be unreasonable if there were always as many students in Glasgow as in Edinburgh that we should compel the Glasgow students to go to Edinburgh.

Professor WILLIAMS.—I beg to bring to the notice of the Council the injustice that would be done to the students in one of these centres on certain occasions. Supposing it happens that there are 100 men going in for the examination from Edinburgh, and they have to travel to Glasgow to be examined. They have to pay £5 for examination, then they would have to pay their travelling expenses and their lodgings, or whatever it may be when they go to Glasgow, so that their examinations will probably cost them £6 or £7. The suggestion that the examinations should be held alternately is too ridiculous, because at Christmas time there might be, between Edinburgh and Glasgow, 30 students for examination, and in May there may be 150 students. So that if it so happens that the turn of Glasgow is Christmas, then the turn of Edinburgh must be May, or it may be that the turn of Edinburgh may be Christmas, and the turn of Glasgow may be May, and you would have a number of students going from one centre to the other who would have to pay perhaps two or three

sovereigns more for examination than their neighbours in the other town. If the Royal College of Veterinary Surgeons propose doing as they used to do, that is, to pay the expenses of the student who goes from his own centre to another, then I should not object so strongly, and I beg to propose that the Report be not adopted.

Mr. CARTER.—I second that.

The PRESIDENT.—The report has been received by the Meeting and is open for discussion.

Mr. LAWSON.—I beg to move formally that the Report be received and adopted.

The PRESIDENT.—I have an original proposition before me.

Mr. SIMPSON.—My position yesterday and early part of to-day was that I was no longer a member of the Committee, and could not take part in the discussion which took place in regard to the finances; on the whole I agree with the recommendation. They make one suggestion with regard to alternate places of examination and they draw attention to the instance, but they make no suggestion as to reduction of expense.

Mr. WRAGG.—I suggest for instance that Christmas examinations take place in Edinburgh one year, Glasgow the next, and same as to May examinations.

Professor M'CALL.—There is one thing which strikes me, and which has not been mentioned, and that is the Student's feelings in connection with the matter. If he goes to attend an examination there is always more or less excitement, and if there is anything that keeps that excitement down it is being in a place he knows. Anyone who has gone through it knows the difference it makes to the Student to have to attend another institution at some distance away to stand for these examinations; and it has always been the custom when there was a small number of men, only perhaps two or three, to meet the wishes of the Council in this respect; but to lay it down as a hard and fast rule is a great injustice to the Principals of the Schools and the Students.

Mr. SIMPSON.—If the examinations are held alternately, they should be held alternately yearly; my reason for suggesting it, is that it may fall to the lot of one of the Colleges always to have their Students examined at Christmas. If it takes place in May and Christmas in alternate years.

Professor METTAM.—Since I am in sympathy with Professor Williams, I suggest that part of the report be amended and made to read alternate years.

The PRESIDENT.—It has been proposed by Professor Williams, and seconded by Mr. Carter, that the words referring to the examinations be deleted. (The Council then voted.)

I declare the amendment lost. It is now open to any member of the Council to propose a further amendment of the original proposition.

Mr. SIMPSON.—I beg to propose that a portion of the report in reference to the holding of examinations be altered to read so the words "alternate years" be inserted, and the words "alternate examinations" be deleted.

Mr. WRAGG.—I second the proposition.

Mr. LAWSON.—That in future the examination in Scotland be held alternate years in Edinburgh and in Glasgow.

The PRESIDENT.—Well, gentlemen, if there is no discussion on that amendment, I shall at once put it to the Council.

It is proposed by Mr. Simpson, and seconded by Mr. Wragg, that the examinations in Scotland be held at alternate years in Edinburgh and Glasgow.

Gentlemen, I declare Mr. Simpson's amendment carried; under these circumstances it is now open for a member of the Council to move a further proposition.

We have an original motion before us that the report as amended be adopted.

I declare that the report as amended is adopted.

Professor WILLIAMS.—I beg to propose that the proposition *re* examinations shall not be put in force for at least two years.

Mr. M'CALL.—I second that.

The PRESIDENT.—Gentlemen, there is a proposition before you by Professor Williams, and seconded by Mr. M'Call, that the proposition as to holding the examinations in Scotland shall not be put in force for two years, and that the clause shall have added to it the words "not come in force for two years."

Professor M'FADYEAN.—I submit that that is irregular: having been adopted it is not open to amendment.

The PRESIDENT.—Without further discussion we will vote; 7 for, 13 against. I declare the motion passed.

The next business is to receive the report of the Registration Committee.

REGISTRATION COMMITTEE.

Professor WILLIAMS.—Owing to the fact that the Chairman of the Registration Committee retired from the Council prior to the last election, and was re-elected to the Council, but has not yet been re-elected to the Registration Committee, nor to the chair of that Committee, I was appointed to take the chair yesterday, and I have been asked to read the report.

The Report stated that at a meeting of the Committee held on June 30, Mr. Simpson having intimated his desire not to be re-elected Chairman of the Committee, it was proposed by Mr. Barrett, seconded by Mr. Mulvey, and carried unanimously, that a vote of thanks be tendered to him for his able and judicious conduct in the chair during the time he had occupied it. The Secretary read an application from Mr. Roberts for the issue of a certificate that he was on the register, in consequence of his loss of diploma. The Committee recommended that this be granted. The Committee recommended that no further proceedings be taken in certain cases, considered that no case had been shown in others, and directed the solicitor to obtain further information in other cases. Satisfactory undertakings had been received in several cases, and the Committee recommended prosecutions in others. The solicitor reported that in one case the offender had been prosecuted, convicted, and fined £10 and costs.

Professor WILLIAMS.—I beg to propose that the report be received.

Mr. MASON seconded.

The PRESIDENT.—Gentlemen, it has been proposed by Professor Williams that the Registration Report be received. I declare it carried unanimously.

Mr. FRASER.—I propose that it is adopted.

The PRESIDENT.—It is proposed by Mr. Fraser that the Report be adopted.

It has been proposed by Mr. Mulvey, and seconded by Mr. Abson, that the authority of the Council be given to the fixing of the Seal to the Warrants of the Presidency, and the same duly sealed and signed.—Carried.

Gentlemen, I now call on the Chairman of the Examination Committee to read his report.

EXAMINATION COMMITTEE.

Mr. MULVEY read the report of the Examination Committee held on July 1. It stated that a letter from the Royal Institute of Public Health was read and duly considered, and it was recommended "That a courteous reply be sent acknowledging receipt of the letter, and further stating that the whole subject of the letter had been for some time under the consideration of the Council, and that a sub-committee be appointed to consider the whole question, with instructions to draw up a report embracing its conclusions." The Secretary submitted a list of Educational Certificates, which, after careful scrutiny, were all passed. The Secretary read the reports of the examinations held in Scotland last May, together with the report from the Chairman of each Section of the Board, and also reports from the delegates. The Committee recommended that a notice be printed across the face of the ticket in red, that a student cannot be examined unless he produces the ticket number of identification, or, in case of loss of same, a note from the Secretary.

On the motion of Mr. Mulvey, seconded by Mr. Carter, the report was received.

Mr. MULVEY moved the adoption of the report, Mr. Locke seconded the motion.

Professor WILLIAMS.—I beg to propose an amendment, that instead of these cards being printed in red that they be printed in blue. (Laughter.)

Mr. WRAGG.—No red circulars!

The PRESIDENT.—Professor Williams' proposition not having been seconded, I will put the motion.

The motion was put and carried unanimously.

SUB-EXAMINATION COMMITTEE.

Mr. MULVEY.—A Sub-examination Committee was called for yesterday, but it was not held, as there were only two members present, who were not sufficient to form a quorum.

PUBLICATION COMMITTEE.

The SECRETARY read the report of a meeting of the Publication

Committee, held on May 11, when the Secretary submitted the drafts of the Annual Report and voting papers. The Committee approved the same, with alterations, and directed that it be left with the Chairman and Secretary to go through the proof.

On the motion of Professor Penberthy, seconded by Mr. Mason, the report was received and adopted.

LIBRARY AND MUSEUM COMMITTEE.

Professor WILLIAMS read a report of a meeting of the Library and Museum Committee, held on June 30, 1904. The Committee recommended that the collection of books in the library presented by the late Dr. Fleming, amounting to some 700 volumes, be properly catalogued.—Agreed.

The PRESIDENT.—It has been proposed by Professor Williams and seconded by General Thomson, that report of General Purposes Committee be received.

Mr. TRIGGER.—The sub-committee should have estimates for repairs, as they are carried out in a most expensive way.

Professor WILLIAMS.—They have been very careful that estimates are submitted for everything.

The PRESIDENT.—It is proposed by Professor Williams, and seconded by M'Kinna, that the report of General Purposes Committee be adopted.—Carried.

Professor WILLIAMS proposed that four gentlemen be elected as a sub-committee to superintend the carrying out of this work.

Proposed by Professor Williams, and seconded by Mr. M'Kinna, that the Committee consist of Messrs. Wragg, Mason, Mulvey, Professor Penberthy, and the President.

The PRESIDENT.—I now call on the Secretary to report and tell us the result of his interview with the Home Office.

Report to the Council of the Royal College of Veterinary Surgeons. Interview which took place at the Home Office, on May 8th, with the Permanent Under Secretary of State with regard to the affiliation of the colleges of Scotland.

"To the Right Honourable The Secretary of State, Home Office.

"SIR,—At a meeting of the Council of the Royal College of Veterinary Surgeons held in London on the 22nd ult. to consider the application made by Professor Williams for permission to remove the New Veterinary College, Edinburgh, to Liverpool, the following resolution was carried by 16 votes to 3 :—

> "'That in the interests of veterinary education the Council of the Royal College of Veterinary Surgeons would welcome any arrangement which would reduce the present unnecessary number of affiliated colleges in Scotland, but for the same reason they feel compelled to express disapproval of the proposal to establish a second veterinary college in England and to have it affiliated to the Royal College of Veterinary Surgeons.'

"On the same occasion, we, the undersigned members of the Council, were appointed as a Committee in order that we might

explain to you at length the reason which induced the Council to pass the resolution quoted above. In discharge of that duty we beg to submit the following memorandum.—We have the honour to remain, sir, your obedient servants,

"F. W. WRAGG (Chairman).
"W. J. MULVEY.
"A. W. MASON.
"J. A. W. DOLLAR."

MEMORANDUM.

Although the proposal upon which the Council have been requested to make observations is nominally one for the removal of the New Veterinary College, Edinburgh, to Liverpool, it appeared to the Council that it would be more correctly described as a proposal to close the above-mentioned College, and to found in Liverpool a new veterinary college with an identical constitution. This seems to follow from the fact that, so far as the Council have been able to ascertain from Professor Williams, he is the only member of the staff of the existing Edinburgh College who would be included in the staff of the College which it is proposed to establish in Liverpool. Touching, in the first place, the proposal to close the New Veterinary College, Edinburgh, we desire to explain that there are at present in existence in Scotland three veterinary colleges, viz., two in Edinburgh and one in Glasgow. This, in the opinion of the Council, is a number altogether in excess of the requirements, seeing that one institution of moderate extent would suffice for the education of the total number of veterinary students who annually pursue their studies in Scotland. It is a fact well-known and recognised throughout the profession that the proper development of each of the veterinary colleges in Scotland has been most seriously retarded by the existence of three schools where one would suffice. The closure of one of these schools would no doubt increase the resources of those remaining and thus enable them to impart a more thorough education than is possible under the existing circumstances.

Coming in the next place to the question of establishing a veterinary college in Liverpool, we desire to point out that the objection which has been mentioned above with regard to the existence of three veterinary colleges in Scotland applies also to the proposal to found a second college in England. It may be observed that the requirements in this connection are strictly limited, since the total number of qualified veterinary surgeons in Great Britain, Ireland, and the Colonies is a little under 3,400. In the opinion of the Council this number is ample for the requirements of the country, and experience has shown that to maintain the Register at its present level (to compensate for members removed from it by death and other causes) not more than 70 new members require to be added annually. Making ample allowance for students who fail in their examinations, it will thus be seen that the number of new students entering the whole of the existing veterinary colleges annually cannot be expected to exceed 120. Half of that number would amply suffice for the

requirements of England and Wales, and we believe that during the last ten years the actual numbers have fallen below that figure. It cannot therefore be maintained that there is any real necessity for the existence of two veterinary colleges in England. Furthermore, if two or more colleges were established to do the work which would not strain the resources of one well-equipped institution, the result would be as detrimental to the interests of veterinary education in England as the existence of three colleges has proved to be in Scotland.

The foregoing objection to the establishment of a second veterinary college in England is of a general character, but it applies with increased force when, as in the present case, serious exception may be taken to the constitution and organisation of the new school which it is proposed to establish. Prof. Williams has stated to the Council that he desires to retain in Liverpool all the rights and privileges which he at present possesses as Principal and owner of the New Veterinary College, Edinburgh. The Council recently appointed a committee to inquire into the constitution of the five colleges now affiliated to the Royal College of Veterinary Surgeons; and from the report presented by this Committee the Council gather that the privileges which were granted in 1873 to the late Prof. Williams, when the New Veterinary College was affiliated, have been regarded as of a personal character, and that they were at his death transmitted to his son, the present Principal of the College. The College thus appears to be devoid of any very definite constitution, but the College premises, &c., are the property of Prof. Williams, and the power of appointing and dismissing members of the staff is vested solely in him. Moreover, the Council have been advised that whatever privileges Prof. Williams at present possesses as Principal of the New Veterinary College, Edinburgh, may be treated as a marketable commodity, and disposed of by him to any person whom he may choose. We respectfully submit that this cannot be regarded as a desirable state of affairs, and while there is no wish to deprive Prof. Williams of any rights and privileges which he may actually possess as Principal of the College in Edinburgh, it appears to be very undesirable that recognition should be extended to any similar constituted veterinary college in Liverpool or elsewhere.

It appeared to the Council that there were two other objections to the veterinary college which it is proposed to found in Liverpool. Prof. Williams has explained to the Council that it is not proposed to provide the College with a complete staff of professors or lecturers, but to appoint a certain number of veterinary teachers, and to supplement the deficiency by allowing the veterinary students to attend various courses of lectures, specially designed for medical students, in Liverpool University. Prof. Williams has even represented that this arrangement would constitute an advance in veterinary education, but with that view the Council are quite unable to agree. With the possible exception of chemistry and biology, none of the courses of medical instruction meet the requirements of veterinary students. It is true that the elementary facts of human and veterinary physiology and pathology are almost identical, but for the proper training of veterinary students special courses of instruction in the physiology and pathology

of the domesticated animals are absolutely essential. To compel veterinary students to be content with courses of lectures on the physiology and pathology of the human subject would be a reversion to the system which prevailed a century ago, but which has now been rightly discarded.

Finally, the Council entertain the strongest possible objection to the way in which Prof. Williams proposes to find the practice necessary for the efficient clinical instruction of the students. The Council were given to understand that the veterinary members of the staff of the College which it is proposed to establish, or certain of them, are to be allowed to engage in private practice in Liverpool, and are thus to be permitted to enter into unfair competition with the private practitioners already established in that city. The Council have had presented to them a petition signed by ten of these practitioners against this arrangement, and we desire to associate ourselves with this protest. It appears to us that this objection to the establishment of a veterinary college in Liverpool ought to be considered fatal, for while it is possible that Prof. Williams might be willing to remove the ground of the objection by agreeing that no member of the staff should engage in private practice, such a concession would deprive the college of all claims to recognition as an efficient institution, as it could not in that case provide itself with the amount of practice necessary for the proper clinical training of its students."

The Under Secretary read it through and said he was under the impression that the affiliation of any School to a University would not only be an advantage to the students but would be a great benefit to the profession; he thought that all schools should be attached, or to use his own words should "hook on" to a University, so much was thought of education at the present time that the connection with the University, and the pecuniary assistance they could give, would result in the better education of the veterinary surgeon, and thereby be a great boon to the profession.

He agreed that there were too many schools in Scotland; three, he said, seemed out of proportion to the requirements.

I said we have not, nor could we get, any information that the school was to be attached to the University, but we understood it was to be attached to the School of Pathology.

Mr. Cunynghame was anxious I should see Mr. R. B. Haldane, who I believe is M.P. for one of the divisions of Liverpool, and standing counsel for the University. I considered my business was with the Home Office, in which Mr. Haldane had no official position; moreover, I conjectured that all the Home Office information concerning the matter under discussion had been given by Mr. Haldane, therefore it was not necessary for me to accept the offer of the Under Secretary for an interview.

Mr. Cunynghame astounded me by saying that he thought it was not necessary for a youth to be very highly educated to enter the veterinary profession. I quickly replied that until 1896 we had insisted that the matriculation examination of the veterinary student should equal that of the medical student, but when the standard of the Medical Council was raised, that of the Royal College of Veterinary Surgeons remained as it was.

The Permanent Under-Secretary received me most courteously, entered very fully into the subject, and appeared impressed with the views set forth in the memorandum. He concluded by saying that he thought no decision would be arrived at until the matter had been brought before the Privy Council, at which the Royal College of Veterinary Surgeons could be represented if they so desired.

On June 9 I called the Committee together, and, after reporting to them the result of my interview, they instructed me to forward the following letter :—

Royal College of Veterinary Surgeons,
10, Red Lion Square, Holborn.
June 11, 1904.

"To the Right Honourable the Secretary of State for Home Affairs.

"*Re* proposed affiliation of a Veterinary School with the Royal College of Veterinary Surgeons.

"Sir,—Referring to the conversation, I, as Chairman of the Committee appointed by the Royal College of Veterinary Surgeons to represent them in the above matter, had with the Permanent Under Secretary of State on May 11, I wish respectfully to draw attention to the fact that since that date an election of Council of the Royal College of Veterinary Surgeons has taken place, at which the crucial question put forward for the decision of the Electorate was the above proposed affiliation.

"The total number of votes polled was the largest in the history of the profession, and the whole of the members elected, without exception, declared themselves opposed to the above proposition.

"As the result represents in the most emphatic possible manner the general feeling of the veterinary profession, my Committee beg me to appeal to you to defer arriving at any decision on the subject until I am able to report to the quarterly meeting of Council of the Royal College of Veterinary Surgeons to be held on the 1st July next.—I have the honour to be, sir, your obedient servant,

"F. W. Wragg (Chairman of Committee.)"

To this letter I have had the usual lithographed answer that it has been received and will receive attention. I beg to move that this report be received.

Mr. Mulvey.—I beg to second that.

The resolution was put and carried unanimously.

The President.—The report is now open for discussion.

The President.—Gentlemen, it has been proposed by Mr. Wragg and seconded by Mr. Mulvey that the Report to the Royal College be received.—Carried.

The Report is now open for discussion.

Mr. Trigger.—I move that it be adopted.

Mr. Mason.—I second that.

Professor Williams.—Sir, before this proposition is put to the meeting, I should like to make one or two remarks which are not at all personal. To begin with, Mr. Wragg in his report frequently

stated that the "Council" of the Royal College of Veterinary Surgeons desired this, and said so and so. I beg to point out that it was the Committee of the Council of the Royal College of Veterinary Surgeons that made those statements. I am very much surprised to hear that a committee meeting of members appointed by the Council of the Royal College of Veterinary Surgeons was held on the 9th June, I presume in the College buildings. I happened to be President of the Royal College of Veterinary Surgeons at that time, and as President it was the duty of the Secretary to see that I was intimated of the meeting. I have never received an intimation of that meeting. I should further like to ask if none but members of Committee were present at this Committee meeting.

Mr. WRAGG.—The meeting was not held, sir, in this building, for my own convenience. I was engaged at the time at the Royal Counties Show at Guildford; I could not get here in office hours, therefore the meeting was held in a private room, and there were present only the members of the Committee.

Professor WILLIAMS.—May I ask, sir, if this Committee that drew up this letter sent to the Home Secretary was formally called by the Secretary of the Royal College of Veterinary Surgeons?

Mr. WRAGG.—No, sir, it was called by myself.

Professor WILLIAMS.—I should like to ask the President is this in order?

The PRESIDENT.—The calling of the meeting by the Chairman of a Committee?

Professor WILLIAMS.—To be held in a private room. I never heard of such a thing being done before.

The PRESIDENT.—Well, sir, it is a point which has never arisen in my own experience, but from my private point of view I really do not see that the Chairman of any given committee lacks power to call his committee together. I take it that any Chairman of committee can call his committee together when he pleases, and provided that all the members of committee receive due notice, and are all equally served with notice, so that no member of committee is overlooked, that the precise manner in which that notice is given is not of essential import.

Professor WILLIAMS.—Then, sir, I draw attention to the fact that an *ex officio* member of the Committee was not notified of this meeting.

The PRESIDENT.—You mean Professor Williams, the President.

Professor WILLIAMS.—Yes. I consider that this was a "hole-and-corner" meeting. If any meeting of any committee appointed by the Council of the Royal College of Veterinary Surgeons was to be called and held it must be called in the proper way, and that is by a circular issued by the Secretary several days before the meeting, and the Secretary must intimate not only to the actual members of the committee, but to the *ex-officio* members of the committee, and I protest against the meetings being held in this manner.

The PRESIDENT.—Very well, I will note your protest. Gentlemen, at the present moment there is a proposition before the meeting, moved by Mr. Trigger and seconded by Mr. Mason, that the report of the Committee be adopted.

Professor WILLIAMS.—Excuse me, but I have asked if they are correct to insert the word "Council" when the word "Committee" ought to have been inserted.

Mr. MULVEY.—The Committee were directly acting on the instruction of the Council.

The PRESIDENT.—I believe that was the view adopted by the Committee, that the Council had deputed to them certain powers, and that the Council would support whatever action the Committee took.

Professor WILLIAMS.—No, sir, the majority of Council, you may say, but not the Council.

The PRESIDENT.—Of course all the actions of Council must necessarily be determined by majorities, and the majority of Council is, for executive purposes, the Council.

Professor WILLIAMS.—But I protest at a Committee assuming the powers of Council and using the name and title of Council. I simply protest, that is all.

The PRESIDENT.—Yes, I will make due note of your protest, Professor Williams. (Cries of "vote, vote.") Have you any further remarks to make, Professor Williams?

Professor WILLIAMS.—I presume that I will be able to see the minutes of this meeting as taken by the Secretary?

The PRESIDENT.—You will be able to see the report of the meeting, Professor Williams.

Professor WILLIAMS.—As a member of Council I think I am entitled to see the minutes of this meeting as taken by the Secretary officially.

Mr. WRAGG.—Which meeting?

The PRESIDENT.—The minutes of the meeting will be open to you undoubtedly as a member of Council, when they have been presented to the Council, in accordance with the bye-law dealing with that matter.

Mr. WRAGG.—Before you put the motion, sir, I find that I have omitted to read some statistics that I placed before the Under Secretary showing the number of students who qualified as veterinary surgeons during the last seven years. They were as follows:—

	London	Dick Coll.	New Coll.	Glasgow	Total	Deaths
1897	48	21	16	16	101	43
1898	55	26	7	15	103	48
1899	50	23	14	12	99	50
1900	36	19	9	8	72	74
1901	44	11	18	12	85	88
1902	51	13	12	7	83	60
1903	34	7	7	6	54	41

The resolution for the adoption of the report was then put and carried, one voting against.

Professor M'FADYEAN.—Before you pass to the next business I think I should be in order in moving that the Committee be asked to continue its functions, to watch over the movement for the establishment of a veterinary college in Liverpool, and to take such steps as may appear to them to be necessary to safeguard the interests of the corporate body.

Mr. LAWSON.—I second that.

Professor WILLIAMS.—By "corporate body" I presume you mean the Royal College of Veterinary Surgeons.

The PRESIDENT.—Yes.

Professor WILLIAMS.—I have much pleasure in supporting that.

Professor M'FADYEAN.—Instead of the "corporate body" I will substitute "The Royal College of Veterinary Surgeons."

The motion as amended was then put and carried unanimously.

Next business is to appoint the Committees of the year.

Mr. MULVEY.—I beg to move that the Registration Committee that consists of the whole Council be re-appointed.

Mr. LOCKE seconded.

Mr. VILLAR.—I suggest that a smaller number should be appointed on the Committee, as it would be more conducive to the businesslike work of the Committee. I suggest seven members, three of whom shall form a quorum, and consider matters would be more expeditiously done if the Committee were half the number. The meetings were so long that members were tired out, mentally and physically, when there were still important matters to be brought before them by the Examination Committee. To economise time and, so to speak, the intelligence of the various Committees, they ought to be reduced to fifteen.

Mr. TRIGGER seconded.

Mr. SIMPSON.—As a late member of the Registration Committee, and one who has had an opportunity of watching the work for a number of years, I must certainly vote against the proposition. From the report which was brought before the Council it was impossible to grasp what work had been done for the Committee by mere records. Not only was it absolutely unanimously agreed that the Committee should be the whole of the members of the Council, but those who had previously constituted the Committee felt extremely relieved at the responsibility being spread over a large number; therefore, I propose that the Committee consist of the whole of the Council.

Professor METTAM.—I had intended to speak on this subject which has been so well expressed by Mr. Simpson. I was asked as a member of Council to vote on a particular question. I absolutely refused to vote until I knew what I was voting about, and wasted the time of the Council for a quarter of an hour until I heard, and I took occasion to move that the Council should constitute the whole of the members, and I think it would be a mistake if we went back from that. We are more likely to get a direct opinion, and it is wisest to continue as we have done during the last year or two.

Mr. GARNETT.—I did not expect to address you to-day, but I should like to give my opinion of the Registration Committee. My experience has been the smaller the committees, the better the work. The way in which that work was carried on struck me as most unbusinesslike, to put it in the mildest way. I do not think that so far as I can understand the cases, that they were properly grasped by any one single individual at the meeting, and I do think that for efficiency the most important work is best carried out by a small and efficient committee whom the Council has confidence in. I am greatly in favour of small committees in carrying out important matters. (Cries, no, no.)

XUM

Mr. BANHAM.—I consider as the whole of the Council has been formed into a committee that we should abide by it. There is safety in numbers, and I should be sorry to see a less number.

Mr. M'KINNA.—I second it.

The PRESIDENT.—It is proposed that number of Registration Committee be limited to 15.

Amendment lost.

I now put the original proposition that the Examination Committee be reappointed with the addition of Messrs. Williams, Thomson, Trigger, and Garnett.

Professor PENBERTHY seconded.—Carried.

Mr. MULVEY.—I now move the reappointment of the Finance Committee, with the addition of Mr. Garnett in the place of Mr. Wartnaby, and Professors Williams and Mettam.

I move the reappointment of the Parliamentary and General Purposes Committee, with the addition of Messrs. Lawson, Thomson, Abson, Garnett, Williams, Hunter, and Villar.—Carried.

Mr. VILLAR.—May I ask that my name be withdrawn?

The President read the resignations of Messrs. Burn, Villar, and Wartnaby.

Mr. MULVEY.—I move the reappointment of the Library and Museum Committees, with the addition of Professor Williams.

Mr. LAWSON seconded.—Carried.

Mr. MULVEY.—I move the reappointment of the Publication Committee, with the addition of Professor Williams.

Mr. TRIGGER seconded.—Carried.

The PRESIDENT.—The next business is to elect Auditors.

Mr. WRAGG.—I propose that Messrs. Woodger and Walner be re-elected Auditors.

Mr. MASON seconded.

Professor WILLIAMS.—I beg to add a cordial vote of thanks for their services. A special vote of thanks to Mr. Woodger as his services are honorary, and a vote of thanks to Mr. Walner as his services are not honorary.

Mr. SIMPSON seconded.

Next business is to fix dates of Council Meetings and Examinations to be held during the official year. Council Meetings are held on the first Thursdays and Fridays in each quarter, and I should be glad if someone will check the proposition, but I think October 6-7, 1904: January 5-6, 1905; April 6-7, 1905; July 5-6, 1905. —Carried.

The PRESIDENT.—Next business is to fix dates of examinations to be held during official year.

Professor M'FADYEAN.—I beg to move that written examinations be held on Wednesday, December 14, and that all examinations shall begin the following day, the 15th. This is the very earliest possible, giving ten weeks from date of opening of the schools. It is not possible to have an interval between the written and oral; as the examinations would not be finished before Christmas, and the examinations have to be conducted in Dublin as well. I also move that the written examinations be held on July 7, in London and Dublin, and that they

always begin on the following Tuesday, 11th, and thought very likely Professor Williams would select one for the Edinburgh examinations.

Professor METTAM seconded.

Professor M'FADYEAN.—And that oral be held Friday, May 19, and they reckon to begin on the following Tuesday, which is 23rd.

The PRESIDENT.—There being no amendment to the proposition I should be glad to know whether the examinations are to be held for the first time in Edinburgh or Glasgow. I wish to do what is agreeable to the Council.

Mr. LOCKE.—I beg to propose that it should be held for the first time in Edinburgh.

Professor M'FADYEAN seconded.—Carried.

The PRESIDENT.—As to whether we will accept the dates as put before us by Professor M'FADYEAN.—Carried.

The PRESIDENT.—Next business appointing examiners for the Walley Memorial Prize Examination and fixing date of examination.

Mr. THATCHER.—There are three subjects and for each subject two examiners, but unfortunately the examiners are not complete in this respect.

Professor M'FADYEAN proposed date of examination be some time in October.

Were the candidates informed that there were no emoluments attached to the office—no pay given to examiners? and a difficulty has arisen with the first subject, for which only one examiner has been appointed. There may be difficulty in complying with the bye-laws regulating the examination, and the appointment should be postponed until a date in October, and an advertisement given out stating that the services of the examiners are required and that the office is purely honorary.

Professor WILLIAMS.—I beg to propose that one candidate be elected, and that an advertisement be sent out.

Mr. TRIGGER proposed that the whole matter be deferred until the October meeting.

Mr. VILLAR seconded.

The PRESIDENT.—It has been proposed by Mr. Trigger, and seconded by Mr. Villar, that the consideration of these questions be deferred until October.—Carried.

It has been proposed by Professor M'Fadyean in both cases, and seconded by Mr. Mason, that the Walley Memorial Prize Examination be held on Friday, October 28.—Carried.

The PRESIDENT.—I now call on Professor M'Fadyean to move a resolution standing in his name.

Professor M'FADYEAN.—I should like to explain very briefly the object for which I invite the Council to pass the resolution of which I have given notice, namely:—

(1) "That it is desirable that each candidate on entering his name for the first time for any examination (A, B, C or D) should be required to produce evidence that he has satisfactorily attended at one of the recognised veterinary schools prescribed courses of instruction in each of the subjects of examination."

It has often occurred to me, and, I believe, to other members of

the Council, that it is rather a curious circumstance that we have always exacted from candidates for our examinations evidence that they have been attached to a particular school for a particular period, and that we have not asked any evidence as to the nature and extent of the tuition that is imparted to them during that period. I think there is an element to be observed in that when I say that if the authorities of any school choose to be so negligent they would be quite in order in checking a student. I do not think there is in the United Kingdom anybody discharging a conscience similar to ours which behaves in such a lax method. I should like, of course, by way of allowing the Council to pass on the resolution any objections that may arise, but, after having given the subject consideration and thought, I do not believe there will be any objections to the resolution. It is hardly conceivable that the students can object. We ought to exercise a little care to see that when the Colleges take their money they ought to see that the students get their money's worth, and I think it is unlikely that there will be any opposition. I think if the resolution is passed, and the second is also passed, that the Council will take at the outset quite a moderate view of the conditions that we should exact with regard to attendance on classes. I said a minute ago that I believe there was no body which discharged its functions similar to ours and in such a lax way. What I meant was this—that a Medical Corporation will not admit students to its examinations on the mere certificate that that student has been attached to a Medical School for a specified period. What the student has got to bring with him is evidence that he has been receiving instructions of a certain length, that he has received so much instruction in the way of lectures theoretically and practically for a period that would enable him to be eligible for an examination in physiology, &c., attending to the satisfaction of the teachers not less than seventy or 100 lectures, as the case may be extending over so many hours.

I submit with great confidence that it would be a very good thing if this Council were to do the same, instead of merely requiring that a student who wishes to present himself, say for the A. Examination, that a certificate to say he has been a student at Glasgow, and that he has been instructed in chemistry, biology, and any part of anatomy in which he has to be examined and so on with the other subjects. I know there are people who say that in point of importance examinations are everything and entirely ousting details with regard to tuition. That is not my opinion, and I do not think it can be the opinion of anyone who has thought about the matter.

The truth is that education is everything. It is vastly more important than examinations. Yet examinations in the case of a corporate body like ours are indispensable. We must see that the students have got what we regard as a maximum of knowledge entitling him to practice in the profession, but the very fact that examination is not by itself enough, is sufficiently proved by the circumstances that we are not allowed to examine students unless they have been at a Veterinary College. I hope, therefore, that I have established that it is perfectly reasonable that we be given and shown reason how he is to spend his time at the Veterinary College.

I therefore beg to move that it is desirable that candidates for A, B, C or D should be required to produce evidence that he has satisfactorily attended at one or two of the examinations.

Mr. MULVEY seconded.

Mr. THATCHER proposed that this matter should come to the Examination Committee for careful consideration.

Professor WILLIAMS.—If Principals of Colleges accept students' fees and do their duty by them, this is absolutely unnecessary. There must be some Principal of a College who is receiving students' fees and granting them certificates knowing that those students are not attending the full necessary course that they really ought to. This is an accusation against the Principal of a school. It cannot be an accusation by Professor M'Fadyean against himself: that is not conceivable? I have not the least doubt that his students receive, perhaps, 150 lectures on a certain subject of fifty-nine minutes each time, and that they receive so many hours' practical instruction; but there is some Principal of a school who only gives 149 lectures, perhaps, of fifty-six minutes, and that it is necessary for this Council to say that teachers must pad out for sixty minutes subject matter that they may, perhaps, put in in fifteen minutes. Teachers are now going to be dictated to as to how long they must take in teaching a subject ("Oh, oh"). I have not the least doubt that Professor M'Fadyean can teach, perhaps, a special method of staining in five minutes, and that there are many so-called pathologists who might take one hour to teach a man how to do that. Professor M'Fadyean would be retarded in his teaching; he will have to devote an hour to the teaching of a special thing because other teachers, perhaps, take an hour. I take it myself as an insult to all other teachers, and Principals principally.

Professor M'FADYEAN.—I think, sir, during the whole of the many occasions that I have had the pleasure of listening to Professor Williams I have never heard him give utterance to anything quite so weak, in my opinion, as what he has just said. He seems to assume that this Council is unable, or the Committee to which the matter will be referred is unable, to form a reasonable estimate of how much tuition a student ought to get in each subject. I did not for a moment intend to suggest that the Committee should find out how many lectures make up a course in pathology at the Royal Veterinary College. What I ask them to do is to express an opinion, and to frame it in a bye-law, as to what constitutes a reasonable course in pathology. Professor Williams may find that the course given by those remarkably clever individuals who can do in five minutes what it takes others to do in an hour will serve as a basis. Professor Williams is quite right in putting my course of lectures in pathology at something over 100. His, perhaps, may be twenty; and I do not for a moment say that he does not teach them more in twenty than I do in 100; but that is a matter that will have to be gone into by the Committee, and if the Committee thinks that the reasonable thing is a course of twenty lectures, of course they will adopt that as the basis. And I may point out to Professor Williams that this class of insult has been offered to all the medical teachers in the kingdom for the last twenty years, but I never heard that one of them protested.

The PRESIDENT.—I have only at the present time before me the proposition of Professor M'Fadyean, seconded by Mr. Mulvey. If there is no further discussion on the point I will at once put it to the meeting.

Mr. CARTER.—Assuming that a student has to take chemistry lectures outside the College walls, such as we used to have, would that debar students who take the lectures outside the College walls from sitting for examination?

Professor M'FADYEAN.—That would be in the hands of the Council, exactly as it is now.

Professor Mc CALL.—The suggestion you make that it is in the hands of the Council exactly as it is now is not so, because if this passes it will be a fact that no student is eligible for his A, B, C, or D examination if he has attended a course of lectures on any one of these subjects outside of the specific veterinary college walls.

Professor M'FADYEAN.—That I may say is the spirit of the Charter and of the bye-laws. But again may I say that Professor McCall is wrong in assuming that these alterations are bye-laws in any way, otherwise I should not have been able to move it. It is merely an expression of opinion on the part of the Council.

Professor Mc CALL.—Then I might say that the Council have already expressed the opinion that on certain subjects, such as chemistry and biology, teaching outside of a veterinary institution could probably be equally as well given as there.

Professor M'FADYEAN.—When was that?

Professor Mc CALL.—In what appeared before us to-day in the correspondence that came from the Home Secretary.

Professor M'FADYEAN.—I beg your pardon, did you say that the Council had expressed that opinion?

Professor Mc CALL.—The Committee who drew up the information which appeared, as far as I recollect, in the correspondence between the Home Office and the Committee who were appointed to inquire into this Liverpool College question. It was stated that chemistry and biology were exceptional subjects in which medical men or others could teach the subject equally as well as veterinary surgeons.

Professor M'FADYEAN.—Nothing was said about that.

The PRESIDENT.—I think that is going a little wide of the point at issue.

Professor McCALL.—I am bringing it to the point, that is to say, if such is the case then it seems to me that it is no hardship on a veterinary student to go outside a veterinary college to a university for his training in chemistry or biology, two subjects which can be taught equally well and with greater facilities perhaps than in the school, and yet be eligible for his examination on producing a certificate that he has attended those lectures—a certificate from the principal of the school which renders him eligible for his first professional examination.

The PRESIDENT.—I think in reference to that question Prof. M'Fadyean has already pointed out that it would be a matter for the Council. If that question arises it is a matter to be determined by the Council; it is not determined by this resolution. This is merely an expression of opinion.

Professor McCall.—But all these things are more or less an expression of opinion to begin with, and the next thing that follows is a bye-law.

The President.—Quite so.

Professor McCall.—I do not want the thing to go any further than an expression of opinion without members of the Council exactly understanding to what this applies. And to my mind it applies in this way, that no veterinary student can go for any class outside of the veterinary school on any subject whatever and be eligible for his first, second, third, or fourth professional examination; he must attend every class within the veterinary college walls.

Professor M'Fadyean.—Will you allow me to explain it, sir.

Mr. Simpson.—Will this be the last?

Professor M'Fadyean.—I do not want any member of Council to vote on this owing to a misapprehension. I want to say most emphatically that I think with regard to the point raised by Dr. McCall he has quite correctly interpreted the phraseology of the motion, that it would insist that whether a student attended outside courses of chemistry or biology or not, he must attend inside courses; in short, it will lay on the veterinary colleges the responsibility that I should have thought they would have been very slow to repudiate, that they are able to provide a complete curriculum.

Professor McCall.—Further than that, if I may be allowed to say so, supposing a man passes his professional examination in human medicine, as happened in my own case. Having passed the professional examination in human medicine you do not require to attend the first year's course of lectures at the veterinary school, nor to go in for the first professional examination; all that was wanted was the second and third, which means that the course was reduced to six years. Now there is a five years' course for human medicine and a four years' course for veterinary medicine. Doubtless the subject of chemistry, botany and so on for the first professional are equally as well taught, if not better now, than they were some years ago, and yet if this resolution is passed it means that a man holding a medical degree, having his final degree in medicine, will require to start for his first professional examination at a veterinary school, attend their lectures on chemistry, botany and zoology and then have to go up for his first professional examination.

Professor Mettam.—He has to now at the present moment.

Professor McCall.—Why was that exception made?

Professor M'Fadyean.—It is a bye-law.

Professor Mettam.—I believe I can put the thing right. It is permissible for a man under the three years' course who is a graduate in human medicine to be relieved of one year in the veterinary college, but when the four years' system was deemed to be right that was done away with, and at the present moment a man holding the highest qualification possible in human medicine must go through the whole of the veterinary course at the veterinary school like a new man.

The President.—I think, gentlemen, that I have given fair licence to all those gentlemen who wish to speak, and I must now put the question.

XUM

Mr. SIMPSON.—Sir, I rose to speak some time ago, but I gave way to Professor M'Fadyean. I only want to be quite clear on this subject. The remarks that fell from Mr. Carter raised some doubts in my mind as to whether this should be voted upon or not. Mr. Carter said that he took his chemistry classes outside of college walls. Suppose these are institutions that still allow particular subjects being taken outside the College walls: will the expression of this opinion really bind us to that principle, that no tuition shall take place, and no certificate of any other body capable of teaching those subjects be accepted?

Professor M'FADYEAN.—That is so now.

Mr. SIMPSON.—Is it not just a little severe?

Professor M'FADYEAN.—It is the rule now.

Mr. SIMPSON.—I am assuming that there are institutions where such education is being given outside the walls. I do not know whether there are.

Professor M'FADYEAN.—I believe not, not that I know of.

Professor M'Fadyean's proposition was then put and carried, 9 voting for and 2 against.

Professor M'FADYEAN.—Without any comment whatever I shall now move—"That it be remitted to the Examination Committee to prepare and submit to the Council draft regulations specifying appropriate courses of lectures and practical instruction to be attended by students in order to qualify for examination."

Professor METTAM seconded the resolution, which was carried, 9 voting for.

The PRESIDENT.—Prof. Dewar being incapacitated from attendance here to-day by illness has sent a letter to the Secretary, which was read at the commencement of the proceedings, asking whether any member of Council would be so good as to take up his resolution in his absence; it is merely to give notice of motion so that it may continue in existence.

Mr. WRAGG.—Professor Penberthy had promised to take charge of this subject, but he was obliged to go away and asked me if I would give notice. I understand it is simply a notice of motion, and therefore it is not necessary to say anything about it. I do not quite understand it, but I give notice of the motion:

"After the 31st of October, 1905, students who enter the Veterinary Schools shall, prior to their first professional examination by the Royal College of Veterinary Surgeons, produce a certificate entitling the holder to be registered as a Medical Student."

If that means that the students are to have the same preliminary examination as medical students, I am rejoiced to be able to move it.

OTHER BUSINESS.

Professor M'FADYEAN.—I want to give notice of my intention to move alterations of bye-laws covering the same ground as the notice just read by Mr. Wragg, as follows:—

To substitute for Bye-law 52 the following:

"Every student who is a candidate for the Diploma of the Royal College of Veterinary Surgeons shall, before he is admitted to the first

professional examination produce a certificate or other evidence satisfactory to the Council to show that he has passed one of the examinations specified in the First Schedule attached to these bye-laws." This alteration to come into force on the 1st August, 1906.

To substitute for Bye-law 62 the following:

"No student shall be eligible for the first examination until he shall have attended one session at a recognised veterinary college or school after having passed one of the examinations specified in the First Schedule attached to these Bye-laws."

This alteration to come into force on the 1st of August, 1906.

To substitute the following for the present First Schedule. (Pages 77-84):

THE FIRST SCHEDULE.

List of Examining bodies whose Certificates of Examinations in General Education are acceptable under Bye-law 52.

I.—UNIVERSITY EXAMINATIONS HELD IN THE UNITED KINGDOM.

A.

Final Examination for a Degree in Arts or Science of any University in the United Kingdom.

B.

UNIVERSITY OF OXFORD:—

Junior Local Examinations. (Certificate to include the required subjects.)
Senior Local Examinations. (Certificates to include the required subjects.)
Higher Local Examinations. (Certificates to include the required subjects.)
Responsions. (Certificates to be supplemented by others showing that the required mathematical subjects have been passed.)
Moderations. (Certificates to include the required subjects.)

UNIVERSITIES OF CAMBRIDGE:—

Junior Local Examinations. (Certificate to include the required subjects.)
Senior Local Examinations. (Certificates to include the required subjects.)
Higher Local Examinations. (Certificates to include the required subjects.)
Previous Examination. (Certificates to include the required subjects.)
General Examination. (Certificates to include the required subjects.)

OXFORD AND CAMBRIDGE SCHOOLS' EXAMINATION BOARD:—Lower Certificate Examinations. (Certificates to include the required subjects.)
Higher Certificate Examinations. (Certificates to include the required subjects.)

XUM

UNIVERSITY OF DURHAM:—
Examination for Certificate of Proficiency. (The required subjects to be passed at one time.)
Senior Local Examinations. (Certificate to include the required subjects.)

UNIVERSITY OF LONDON:—Matriculation Examination. (Certificate to include the required subjects.)

VICTORIA UNIVERSITY OF MANCHESTER, UNIVERSITY OF LIVERPOOL, AND UNIVERSITY OF LEEDS:—
Matriculation Examination. (Certificate to include the required subjects.)

UNIVERSITY OF BIRMINGHAM:—Matriculation Examination. (Certificate to include the required subjects.)

UNIVERSITY OF WALES:—Matriculation Examination. (The required subjects to be passed at one time.)

UNIVERSITIES OF SCOTLAND:—
Preliminary Examination of the Joint Board of Examiners of the Scottish Universities for Graduation in Medicine and Surgery. (The required subjects to be passed at one, or not more than two Examinations.)
Preliminary Examination of the Joint Board of Examiners of the Scottish Universities for Graduation in Arts or Science. (Certificates to include the required subjects.)

UNIVERSITY OF ST. ANDREWS:—
Final Examination for the Diploma of L.L.A.

UNIVERSITY OF DUBLIN:—
Principal Public Entrance Examinations. (The required subjects to be passed at one time.)
Examinations for the First, Second, Third, or Fourth Year in Arts. (Certificate to be signed in the approved form by the Medical Registrar of the University.)

ROYAL UNIVERSITY OF IRELAND:—
Matriculation Examination. (Certificate to include the required subjects.)

II.—GOVERNMENT EXAMINATIONS HELD IN THE UNITED KINGDOM.

SCOTTISH EDUCATION DEPARTMENT:—
Leaving Certificate Examinations: passes in Lower Grade. (The required subjects to be passed at one, or not more than two examinations.)
Leaving Certificate Examinations: passes in Higher Grade or Honours. (To include the required subjects.)

INTERMEDIATE EDUCATION BOARD OF IRELAND:—
Middle Grade Examination. (The required subjects to be passed at one time.)

Senior Grade Examination. (Certificates to include the required subjects.)

CENTRAL WELSH BOARD :—
Senior Certificate Examinations. (Certificates to include the required subjects.)

III.—EXAMINATIONS BY CHARTERED BODIES HELD IN THE UNITED KINGDOM.

COLLEGE OF PRECEPTORS :—Examinations for First-class Certificate. (The required subjects to be passed at one, or not more than two examinations.)
Preliminary Examination for Medical Students. (The required subjects to be passed at one time.)

EDUCATIONAL INSTITUTE OF SCOTLAND :—
Preliminary Medical Examination. (The required subjects to be passed at one time.)

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS IN IRELAND :—
Preliminary Examination. (The required subjects to be passed at one time.)

IV.—EXAMINATIONS HELD OUT OF THE UNITED KINGDOM.

UNIVERSITY OF MALTA :—Matriculation Examination.

UNIVERSITY OF CALCUTTA :—
First Examination in Arts.

UNIVERSITY OF MADRAS :—
First Examination in Arts.

UNIVERSITY OF BOMBAY :—Matriculation Examination.

PANJAB UNIVERSITY :—
Intermediate Examination in Arts.

UNIVERSITY OF ALLAHABAD :—
Intermediate Examination in Arts.

CEYLON MEDICAL COLLEGE :—
Preliminary Examination.

UNIVERSITY OF M'GILL COLLEGE, MONTREAL :—
Matriculation Examination.

UNIVERSITY OF BISHOP'S COLLEGE, MONTREAL :—
Matriculation Examination.

COLLEGE OF PHYSICIANS AND SURGEONS OF THE PROVINCE OF QUEBEC :—
Matriculation Examination.

UNIVERSITIES AND COLLEGES OF THE PROVINCE OF ONTARIO :—
Departmental Arts Matriculation Examination (conducted under the direction of the Provincial Education Department).

UNIVERSITY OF MANITOBA:—
Preliminary and Previous Examinations.

UNIVERSITY OF NEW BRUNSWICK, FREDERICTON:—
Matriculation Examination.

UNIVERSITY OF MOUNT ALLISON COLLEGE, NEW BRUNSWICK:—
Matriculation Examination.

COLLEGE OF PHYSICIANS AND SURGEONS, NEW BRUNSWICK:—
Matriculation Examination.

DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX, NOVA SCOTIA:—
Matriculation Examination.

PROVINCIAL MEDICAL BOARD OF NOVA SCOTIA:—
Preliminary Examination.

NEWFOUNDLAND MEDICAL BOARD:—
Preliminary or Matriculation Examination.

UNIVERSITY OF MELBOURNE:—
Matriculation Examination.

UNIVERSITY OF SYDNEY:—
Matriculation Examination. First Year Examination in Arts. Senior Public Examination. Entrance Examination for Medicine and Science.

UNIVERSITY OF ADELAIDE:—
Senior Public Examination. First Year Examination in Arts.

UNIVERSITY OF TASMANIA:—
Senior Public Examination.

UNIVERSITY OF THE CAPE OF GOOD HOPE:—
Matriculation Examination.

UNIVERSITY OF OTAGO:—
Preliminary Medical Examination.

UNIVERSITY OF NEW ZEALAND:—
Preliminary Examination for Medical Students.

CODRINGTON COLLEGE, BARBADOS:—
Examinations qualifying for a Degree in Arts at the University of Durham.

FOREIGN UNIVERSITIES IN EUROPE:—
The German Abiturienten-Examen of the Gymnasia and Real-gymnasia; Examinations entitling to the French Diplomas of Bachelier ès Lettres and Bachelier ès Sciences, and other corresponding Entrance Examinations to the Universities in Europe.

EGYPTIAN GOVERNMENT:—
Examination for the Secondary Education Certificate.

(*a*) No Certificate from the Indian and Colonial Bodies in the foregoing Section (iv.) is accepted unless it shows that the Examination

has been conducted by or under the authority of the Body granting it, includes all the required subjects, and states that all the subjects of Examination have been passed at one time.

(*b*) In the case of Natives of India or other oriental countries whose vernacular is other than English, an examination in a classical Oriental language may be accepted instead of an Examination in Latin.

Subject to the conditions indicated in the foregoing List the Preliminary Examinations recognised by the Council are required to include the following:—

(*a*) ENGLISH (Grammar; Paraphrasing; Composition; questions on English History and Geography).

(*b*) LATIN (Grammar; Translation into English from unprescribed Latin books; Translation into Latin of a continuous English passage, and of short idiomatic English sentences).

[In the case of Natives of India or other oriental countries whose vernacular is other than English an examination in a Classical Oriental Language may be accepted as equivalent to an examination in Latin.]

(*c*) MATHEMATICS (Arithmetic; Algebra, including easy quadratic equations; Geometry, including the subject matter of *Euclid*, books i, ii, iii, and simple deductions).

(*d*) One of the following subjects:—

(1) GREEK (Grammar; Translation into English from unprescribed Greek books; Translation into Greek of short idiomatic English sentences); or

(2) A MODERN LANGUAGE (Grammar; Translation into English from unprescribed books; Translation of a continuous English passage, and of short idiomatic English sentences).

In giving notice, Professor M'FADYEAN said:—The effect of the latter provision (bye-law 62) if it is passed would be to prevent students from beginning their professional studies before they had passed the General Knowledge Examination.

Then let me explain what it is that I am substituting for the present first schedule. I went to the offices of the General Medical Council yesterday and obtained a copy of the regulations now in force with regard to the general education of intending medical students. My proposal is to substitute this for the existing schedule. It is the same as Professor Dewar's, except that Professor Dewar's would absolutely bind us to follow the General Medical Council without any consideration whatever, if they thought fit to alter their schedule.

Mr. SIMPSON.—I beg to give notice that at the next meeting I will draw attention to that part of bye-law No. 3 which deals with the issue of foreign voting papers, and that I will propose a resolution.

Mr. TRIGGER.—I beg to move a hearty vote of thanks to the new President for the admirable manner in which he has conducted the meeting.

(Carried by acclamation.)

The PRESIDENT.—I thank you very much, gentlemen.

The meeting then terminated.